

AMERICAN RAILROAD JOURNAL, AND ADVOCATE OF INTERNAL IMPROVEMENTS.

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D. K. MINOR, EDITOR.]

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AMERICAN RAILROAD JOURNAL, &c.

NEW-YORK, OCTOBER , 1833.

UNDULATING RAILWAYS.—A large portion of the Journal this week is devoted to the subject of Undulating Railways. It has caused a warm discussion in England, and will, no doubt, call out some of our esteemed correspondents. We have neither leisure nor science to discuss it, and, therefore, must rely upon those of our friends who have both at their command.

Having, by experience, felt the want of a more complete INDEX to the Journal, we have had one made for the first volume, and for the first six months of the second volume—and for the greater convenience of those who desire to bind the Journal in parts of six months, instead of the whole year in one—the index is printed in parts of six months, with a title page to each. They will be forwarded to all those who are now Subscribers, in the course of the ensuing week. At the close of the year another index and title page, for the second half of the present volume, or from the 1st of July to the 1st of January, will be forwarded with the last number of the volume. This measure has been attended with some expense, but finding that most of our subscribers are desirous to bind and preserve the Journal, we have encountered it for their convenience and our own satisfaction.

✂ Editors who receive this Journal in exchange, will please discontinue all advertisements of my various publications which they now have in their paper, as I may find it necessary to discontinue it at the close of the present volume. Those who have received subscri-

bers, and not yet remitted the money, will please do so, by mail, as early as possible.

The increased expenditure, in consequence of the improved appearance of the Journal since October last, has so greatly exceeded the increase of subscribers, which was anticipated from the measure, that I am compelled either materially to reduce its cost of publication,—increase its circulation, and sale of copies on hand, (of which I can furnish five hundred complete sets from its commencement)—or discontinue its publication. The friends of, and those interested in, Railroads, are certainly the best judges of its utility, and of its tendency to promote the cause to which it has been mainly devoted; and, therefore, it will be for them to say whether, by their aid in extending its circulation, and in the sale of copies now on hand, it shall be continued longer than the close of the present volume—FIRST OF JANUARY NEXT—or whether it shall be then discontinued for want of a sufficient number of subscribers to pay the expense of publishing it.

The sale of one half of the copies on hand, with an equal increase of subscribers for the current and ensuing volumes, would be ample to secure its successful continuance, by enabling me to meet promptly its expenses, and also to derive a small compensation for my own time devoted to it, which, thus far, has not been the case—but, on the contrary, it is indebted to me several hundred dollars, in addition to my having superintended its publication without compensation for nearly two years. I would, therefore, observe, that unless the sale of copies on hand, and the circulation of the present volume should be considerably increased before the close of the year, I shall either change its form, reduce its size, and discontinue most of my exchanges, and thereby reduce its expenses of publication, or discontinue it altogether, and devote my attention wholly to my other publications—which are far more liberally patronized, and from which I derive some compensation for my services.

** Would it not be well worth the while for EACH RAILROAD COMPANY IN THE UNITED STATES to order a few copies bound, for the use of their Engineers, while engaged in surveying and constructing their Railroad? Is it

not possible—indeed, is it not highly probable—that they might be benefitted in the saving of expense, by some of the numerous suggestions and plans therein published, to many times the amount of the cost of the Journal? In the survey of a route which costs thousands—in the construction which costs hundreds of thousands—or in the completing of a long line of Railroad, with its machinery, engines, freight, and passenger cars, and other numerous appendages, which cost MILLIONS—is it not almost certain that some useful information, or hint, would be derived from the "Railroad Journal," which contains more reading upon the subject of Railroads, Railroad machinery and improvements, than ALL THE OTHER PERIODICALS IN THE UNITED STATES TOGETHER? There cannot, in my opinion, be a doubt of the advantage they would derive from such a measure. Should those interested in Railroads agree with me in this suggestion, and act accordingly, by giving me orders for the Journal, at an early period, so as to increase my list of subscribers to fifteen hundred by the close of the year, it will be continued with increased energy and improved appearance.

D. K. MINOR.

P. S.—It may not be amiss to say that the expenses of publication have exceeded the receipts from subscribers, in consequence of the publication of a larger number of copies than were subscribed for—upon expensive paper, and with a heavy cost for engravings—and that the sale of one half of those now on hand would place the balance on the other side of the ledger.

Should it be said that I have "assured the public of its continuance," or that "its permanence was established beyond a doubt," &c., I would reply that, from the favor with which it was received, and the assurances given me of aid in its circulation, of that fact I had not a doubt—nor do I now doubt its permanence—as I trust that the friends of Railroads and Internal Improvements—who are also, generally, its friends—will make an effort to extend its sale and circulation, so as to place it upon a fair basis. Three hundred additional subscribers will insure its continuance.

N. B.—Should it be discontinued, or changed in its appearance, at the close of this volume, timely notice will be given, and those who may have paid in advance of that period, will receive the balance in money—unless they should be willing to receive the MECHANICS' MAGAZINE, AND REGISTER OF INVENTIONS AND IMPROVEMENTS, to the amount then due them.

NEW MOTIVE POWER.—Dr. Ritchie, in one of his recent lectures on electro-magnetism, at the Royal Institution, proved by experiments that by suddenly changing the poles of an electro-magnet, a bar of soft iron might be made to revolve with considerable force about its centre, thus obtaining a prime mover, which may probably be applied to useful purposes.

GRAND JUNCTION RAILWAY.—The act for this railway, which is to unite the Liverpool and Manchester with the Birmingham railway, has passed through both Houses without opposition, and received the royal assent at the same time with the Birmingham Railway Act.

The Undulating Railway. By JUNIUS REDIVIVUS. [From the London Mechanics' Magazine.]

SIR,—Your correspondents, Messrs. Badnall and Cheverton, have fallen on me tooth and nail, on the subject of my letter respecting the undulating railway, but neither of them seems to have accurately read the letter in question, and consequently without taking into consideration the fact of the very bare data on which I wrote, they pleasantly enough assume that I ought to have taken another ground of attack. All that I knew of the railway was from a casual hearing that there had appeared a paragraph in the 'omnium gatherum' of the 'leading Journal,' stating that an undulating railway had been invented, whose effect would be utterly to destroy all level railways by its superior utility. The *Athenæum* I have not seen. Feeling interested in the matter, I caused inquiries to be made at the Adelaide Gallery, but lo! the carriage had disappeared, and the inventor had retired to 'Brummagem.' Inquiry was made for a prospectus, and reference was given to Messrs. Sherwood, Gilbert, and Piper. Application was made to that firm, and the reply was, that nothing was known of it. Now, what inference could be drawn under these circumstances, but that the whole thing was a gull? I therefore assumed that the object of the undulating railway was to increase power or diminish friction, in short, to make a given amount of power do more work. Upon this assumption I reasoned, and I have reason to know that the reasoning was to the satisfaction of many persons besides myself, though Messrs. Badnall and Cheverton are not satisfied. I certainly do not purpose entering into the abstruse calculations the former gentleman adverts to in his two questions, and for which I have neither leisure nor inclination. I shall only state generally, that even supposing the total amount of friction to be the same on the curve and on the level, the accumulation of friction which will take place upon one-half of the ascent, will rack, and rapidly destroy either the engine or horses from which the power may be obtained. Neither shall I attempt to calculate the difference of the velocity on the curve and on the horizontal line, but content myself with remarking, that it is only by an increase of power that an increase of speed can be obtained. Does Mr. Badnall purpose using fixed engines on the summit levels to draw the carriages up the ascending curves? Before he puts upon me the onus of setting forth his fallacy, it would be but fair that he should give your readers an opportunity of knowing what it is that he really proposes to do, and wherein the advantage consists of the undulating surface over the level. I have taken some pains to acquire the information, but have not succeeded. You have been in the same predicament, and have evidently drawn the same conclusions as myself. Mr. Badnall seems sore with me: I regret it; I did not wish to hurt his feelings. I spoke of the railway, not with reference to persons, but to things. And my incredulity may certainly be excused, when it is considered that want of sufficient explanation, on the part of

Mr. Badnall, has left me as well as others in the dark. I really should not be the last to hail with joy such a triumph of mind over matter as Mr. B. proposes, but I should like first to see it fairly made out beyond dispute.

Mr. Cheverton begins his letter by deprecating any intention of giving offence. It was needless—I am but a shadow, and as void of taking, as of intentionally giving offence, having no object in putting forth my ideas, such as they are, save the eliciting of truth, by which result I as well as others may hope to benefit. I say to all, strike and spare not, and, whenever culpable, I will bow to the chastening rod. Had I been an offence-taker, Mr. C. has certainly hit upon the best mode of provoking it. He calls me a 'clever writer.' I had rather he called me a fool, since the latter may be an honest man, whereas the former commonly means a man who can argue like the 'lawyer' Mr. C. alludes to, on any side of a question, without caring for the truth. I may be an 'unpractised thinker,' of which allegation I leave your readers to judge, but I assuredly am not a 'writer,' in the literary meaning of the term; and as for cleverness, I should be sorry to have it proven upon me, as being the direct opposite to either wisdom or honesty.

With regard to the general effect of the railway in question, Mr. C. seems to hold the same incredulity as myself, though he would seem to know something more of the details than I do. How he came by his knowledge I cannot divine, inasmuch as he says, specifically, 'I cannot enter upon this point, as I have not investigated nor even seen the experiments.' Taking this acknowledgment into consideration, he would seem to speak with over confidence as to the 'facts' of the experiments. I will not say, with his friend the engineer, that 'though I should see it I would not believe it,' but were I to see it, I should be suspicious of a trick in the first instance, and in the next, when satisfied that the thing was actually a fact, I should be disposed to think that the age of miracles had returned, and that the laws of nature were in one especial instance subverted. Mr. C. would seem to be rather 'superficial,' in expecting me to reason without data; and that I had no more data than yourself to go upon, I have already set forth. I could not set forth a fallacy, which had not been presented to me for examination.

With regard to the scheme of locomotion from summit to summit, by means of the pendulum, I shall not reason upon it as a mathematical proposition, but as a practical matter. A carriage, say of one ton weight, exclusive of wheels and axles, will require a certain power to draw it along a given level. This carriage would be upon four axles of the smallest diameter consistent with security. If it were taken off the four axles, and slung upon one axle, it would be found in practice that the single axle would require to possess four times the strength of each of the four, and the friction upon the increased diameter would consequently be in the same proportion. More than this, the suspending bars would be no slight addition to the total weight, and something extra must be allowed to the single axle on that account. Therefore, taking into consideration the friction of the axle, slow though the motion be round the axle, the resistance of the air, the power required to move the carriage along the 'short roads,' the hanging and unhangings, the increased distance between the curve and the level, and the extra weight, I should say at once that the process would be less economical than that of the four-wheeled carriage on the level. There is no need of mathematical calculation to come to this result, and I cannot conceive the use of propounding abstruse mathematical calculation in a matter which, it is self-evident, can turn to no useful account. Mr. Cheverton will not set about pendulum locomotion in earnest, when he takes into consideration the expense of the lofty pillars required for the points of suspension, for the world is not yet ridged up into equal distances like a ploughed field. As for 'the proposition that all hindrance is provided a-

gainst,' it is nothing more than a proposition that all friction shall be voted a bore; but so long as the bore continues to exist, so long will the pendulum locomotion remain an unprofitable speculation. When it shall be overcome, the only difficulty will be to chain up locomotive machines, to prevent them from doing damage by the exercise of their ruling passion—to move. Mr. C. asks me to show 'how and where the diminution of friction at any place or places along the curve would be compensated by an excess of friction in others.' The exact 'where,' I shall not attempt to shew; that it is so, I will endeavor to illustrate in a familiar manner. Let Mr. C. take a common carpenter's saw from the mould-loft, and screw it in a vice with the edge uppermost, parallel to the horizon; then let him traverse a roller along it in both directions, and he will find that the amount of friction will be considerably more from point to heel than from heel to point. The reason of this probably is, though I do not pronounce confidently, that the elasticity, both of the roller and the saw, exerts a greater force to overcome the friction in the latter case than in the former. The opposing points, in the former case, deaden the elasticity, and leave the friction to exert its whole force. Now, in running a carriage down hill, there is a very considerable quantity of elasticity brought into play; in some cases the friction is nearly all removed by the carriage actually bounding in the air, a fact which, as I have before remarked, caused, as I have been informed, the application of steel springs to coal-waggons. But after the carriage has descended with the velocity increased by the elasticity, it serves to impinge it with the greater force against the opposing points of the ascending curve, and the momentum is accordingly expended more rapidly than it was accumulated. As the ascent increases the friction increases also, and it is aided by the centre of gravity increasing its distance behind the point of contact. To state the matter shortly, the carriage runs down hill because the centre of gravity is before the points of contact; it will not run up hill, because the centre of gravity is behind the point of contact; and the elasticity which aids the downward momentum is absorbed on the ascent, in a ratio quicker than that of its generation, while no fresh elasticity can be generated, for the carriage in its ascent adheres closely to the track on which it moves. How Mr. Badnall purposes to apply his moving power I know not, but I apprehend that a steam-engine is not by any means improved by going at a very irregular pace; going down hill, scarcely any power would be needed—going up hill, an enormous power would be needed; and that horses are not the better for being unequally worked was sufficiently proved by the fact of the large expenditure of capital on the Highgate Archway.

Mr. Cheverton thinks it marvellous that carriage-builders should not be aware of the fact, that 'a plate of iron was stiffer placed on its edge than when flat.' Whether they are aware of the fact or not I do not pretend to pronounce. That it is a fact that some of them use their plates in an unscientific manner, he cannot doubt, when two of the guild, 'Phæton,' and 'A Carriage-maker,' have held differing opinions on it in the pages of your Magazine. Mr. C. is witty on my proposition to ballast carriages as ships are ballasted, yet wherein it is ridiculous I am at a loss to divine. He would scarcely propose to save weight in the use of the ship, by omitting the ballast altogether. This would be like the ape in the story, who

'To try conclusions, in the basket crept,
And broke his own neck down.'

In the case of the carriage, the proposition was not the saving of weight, but the adjustment of the springs to the necessary tension for either one or more persons, and solely with a view to the greatest comfort of the riders. If it were merely desired to save weight, the springs should have been altogether omitted, if it be desired to procure the most perfect state of elasticity, conducing to the comfort of the

riders, I should feel obliged if Mr. C. would point out any better mode than the one I have proposed. The better to illustrate what he has conceived the absurdity of my proposition, Mr. C. has introduced the story of the Spanish mule; but it has proved a failure, and has served to evidence two things against himself: first, that he has not studied the philosophy of mule loading; and, next, that he is guilty of the 'unpractised thinking' with which he charges me. Had the spirit of Mr. C. ever inhabited the body of a mule, after the fashion of the transmigration doctrine, or had he served any time as an *arriero*, he would know that the most essential thing to the orderly travelling of a loaded mule is, that the cargo should be as nearly equal in weight and bulk as possible, on either side the pack-saddle. A good mule will carry four hundred pounds weight, two hundred on a side. Now, were two hundred and fifty placed on one side and two hundred on the other, and the mule could speak, like Balaam's ass, he or she would say to Mr. Cheverton, supposing him to be the muleteer, 'Be so good as either to take away the odd fifty from my right side, or if that cannot be done, as the next best thing, add another fifty to the left side, because the heat of the pack-saddle and the cloths beneath it has stewed my hide almost to a jelly, and the unequal strain across my back-bone will burst it when the cargo begins to jolt.' Now, with an inanimate cargo there is sometimes a chance of reduction; but as Mr. C. laughs at the muleteer's plan in the case of the live cargo, he is bound to show what better plan he would have adopted, or forfeit his reputation as an engineer skilled in resources. Would he have eschewed the 'load of stones,' and then have gravely purposed to pare away the superfluous weight from the biggest traveller, after the Procrustean recipe? I suspect that the Andalusian knife, or the four-square blade of the *matador*, would have been brought forward in arrest of judgment. There is a saying amongst the mountain muleteers of some parts of Southern America, *La mula sabe racionar mejor que algunos Christianos*. The mule knows how to reason better than some Christians.

With regard to the repeating air-gun I proposed, Mr. C. has taken 'an incomplete and superficial view' of my letter. If he reads it again; he may discover that there was no proposition therein to 'multiply power by complication,' but simply the substitution of compressed air, which would not destroy the gun, instead of the steam and intense fire which does destroy the gun. The power is to be communicated to the air by means of the steam, because the steam itself cannot well be applied. *Voilà tout!* Really Mr. C. would seem to be an 'unpractised thinker.' Ere he so triumphantly quoted my words, to the intent of my 'mere confusion,' as Cloten says in the play, it surely would have been but a very small portion of wisdom to endeavor to understand the tendency of the air-gun letter, notwithstanding the obscurity of my mode of writing.

Mr. C., at the conclusion of his letter, again hopes that his 'observations will be taken in good part.' They are so, and replied to in the same spirit, and I have to thank him in addition for having thus given me an opportunity to explain myself more fully.

I am, sir, yours, &c.

JUNIUS REDIVIVUS.

April 22, 1833.

*Mr. Badnall's Treatise on Railway Improvements, and in particular the Undulating Railway.** [From the London Mechanics' Magazine.]

The principal subject of the treatise before us is introduced by a preliminary exposition of

the advantages of railway conveyance, and an examination of the obstacles to their immediate general establishment. Among these obstacles, the "difficulty of ascending inclined planes by locomotive power" occupies a foremost place. The employment of "stationary engines," or "locomotive engines with cog-wheels," to overcome this difficulty, is briefly adverted to, but justly pronounced to be attended "with serious if not insuperable inconveniences." Mr. Badnall's attention having been "particularly directed" to the discovery of some better remedy, the idea at length occurred to him that a sufficient power might be gained by the descent of a body down one inclined plane, to compensate for the opposition from gravity in ascending another; and if so, that a railway uniformly constructed in such an up and down, or undulating plan, might be economically substituted for the partly horizontal and partly inclined railways at present in use.

"The improvement occurred to me on the 7th of June, 1832. The impressions on my mind, before the trial of any experiments, were, that by an undulating railway a greater resistance would be opposed to the power of steam, or any other locomotive power, than upon a level railway; but that much would be gained by the power of gravity, multiplied by active power, down a descent; and that, consequently, a locomotive engine of any given power would travel at a greater speed, or drag a greater weight, than upon a horizontal railway. I was also of opinion that the increased resistance or fulcrum, offered by the descending part of each curve, and the advantage gained by the power of gravity multiplied by active power, would be sufficiently great to render locomotive engines more effective than they have at present proved to be upon inclined planes."—p. 31.

Mr. Badnall, after some explanatory remarks on the subject of friction and gravity, proceeds to describe the different experiments which have, in his opinion, fully established the soundness of these his preconceived opinions. Some of the more striking of these we shall here lay before our readers.

"I ordered a small engine to be manufactured, on clock-work principles, with a strong spring in a barrel, and a fusee sufficiently large to admit of travelling the length of 50 or 60 feet, being also particularly anxious that the power of the spring should be sufficient to overcome the pressure of the engine wheels on the plane, when kept from progressing. Wishing to try these experiments as privately as possible, during the time which the manufacture of the engine occupied, I was engaged at Douglass, in the Isle of Man, in superintending the making of two railways, the one curved, the other horizontal. These were each 32 feet in length (the length of the most spacious room I could find unoccupied); the length of the ascent and descent of each curve, or undulation, was one foot, and the height and depth of each curve from the centre was half an inch, or one inch from the summit of the convex to the base of the concave of the curve. I had also ordered a small carriage to be made, to be attached to the engine, when necessary, and to run upon four wheels of the same diameter as the wheels of the engine.

"On the 23d July I received the engine and carriage from Liverpool; their weights were as follows—Weight of engine, 9 lbs. 6 oz.; weight of carriage, 3 lbs. 10 oz.; diameter of wheels, 3 inches: width of the periphery of the wheels, $\frac{3}{4}$ of an inch.

"On trying the strength of the spring, I was sorry to observe that it was not sufficient, when I placed the carriage on a smooth surface and prevented its progression, to turn the wheels; that is, it had not power, as I wished it to have, to overcome the adhesion, or friction, between the wheels of the carriage and the surface of the plane.

"I, however, resolved to try a series of experiments with it, and afterwards to return it to Liverpool, to have a stronger spring attached to it.

"Accordingly, I had the railways placed firmly down, and upon as exact a level as circumstances would permit. The distance between the lines on each railway was eight inches; the width at the surface of the rails was half an inch; the distance between the wheels of the engine governed, of course, the width between the lines; and care was taken to give the carriages sufficient play to prevent them being bound by friction against the sides of the rails.

"Having ascertained that both railways were level, the spring was wound up, by drawing the engine backwards from the end of the line to the commencement. It was started without any weight attached, and the following was the result: Curved railway, 6 seconds; horizontal railway, 7 seconds.

"I then placed 7 lbs. weight upon the engine itself, which had a platform for such purpose: the result was, curved railway, 8 seconds; horizontal railway, 9 seconds.

"I then attached the small carriage to the engine, and, without load, I found the speed of travelling along either line was in the same proportion as before.

"I then tried various weights in the carriage, and invariably found a decided advantage in the curved railway. This advantage was, however, more evident in the following experiments: With 17 lbs. weight in the carriage, from north to south, curved railway, 15 $\frac{1}{2}$ seconds; horizontal railway, 20 $\frac{1}{2}$ seconds. From south to north, curved railway, 17 seconds; horizontal railway, 22 $\frac{1}{2}$ seconds.

"Now, omitting the half-seconds, and taking the averages, the difference of space which the engine would have travelled over on the curve, in the time required to travel 32 feet on the horizontal plane, is as follows—16 : 32 : : 21 : 42 feet; shewing a difference of nearly one-third in the speed.

"Thinking it probable that, by the variation in the time occupied in traversing the lines from different sides of the room, that they might not be perfectly level, I had them again examined and adjusted with particular caution; after which, on again trying with the same weight, viz. 17 lbs., the result was as follows: From north to south, and south to north, on the curve, 16 seconds; on the level, 22 seconds.

"This last experiment was repeatedly tried, and without any distinct variation; the time was ascertained by a second-hand watch, and carefully noted by Mr. J. L. Gardener, of Manchester, who witnessed the experiments, as well as myself.

"Although I perceived that 17 lbs. was as great a weight as the engine could well convey upon the horizontal railway, I was anxious to try the result of greater, and increased the load to 22 lbs. The result was, from north to south, on the curve, 17 seconds; on the horizontal line, 30 seconds. From south to north, on the curve, 18 seconds; on the horizontal, 28 seconds.

"It was here quite obvious, that the curve produced a far more decided advantage; and this advantage was evident at starting; as, on the horizontal road, the engine moved very slowly at first, and traversed 12 or 13 feet before it attained its average speed, whereas, upon the curved line, its motion was apparently regular throughout.

"Although these experiments were in every point of view so satisfactory in regard to speed, I was surprised to find that the advantage was not so great as I anticipated in regard to the difference of load the engine was capable of dragging on the two lines. I, however, clearly proved that we could convey a much greater weight upon the curve line than upon the plane; for when the engine would not move at all upon the horizontal road, it would travel without difficulty upon the curve; and it is extraordinary, that in conveying any weight from 15 lbs. upwards on the latter, the time occupied in doing so varied in a very trifling degree.

* A Treatise on Railway Improvements, explanatory of the chief Difficulties and Inconveniences which at present attend the General Adoption of Railways, and the means by which these objections may be overcome; as proved by a Series of Interesting Experiments, &c. By RICHARD BADNALL, Esq. 142 pp. 8vo. Sherwood & Co.

"The same comparative results took place upon an inclined plane of 1 in 144."

A second undulating railway having been constructed, with a curve of five feet ascent and descent, and two inches in depth, and some alterations having been made in the engine, which made it both stronger and lighter, the following additional experiments were made:

Number of Seconds.			
Horiz. pl. 1 ft curv. 5 ft curv.			
Engine alone, weighing 9 lbs. 4 oz. and the hind and fore wheels 5-16 inches apart,	5	4	3½
Do. and carriage, weighing together 12 lbs. 14 oz.	5½	4½	4
Do. with 5 lbs. in carriage,	6½	5½	4½
Do. with 10 do. do.	8½	6½	5½
Do. with 15 do. do.	9½	7	6
Do. with 20 do. do.	13½	8½	7½
Do. with 25 do. do.	18	11	9
Do. with 30 do. do.	30	14	11
Do. with 35 do. do.	could go	18	12
Do. with 40 do. do.	could not go	13	13
Do. with 45 do. do.	could not go	15	15

After repeatedly trying these experiments, and always obtaining the same results, Mr. Badnall had another railway constructed with short ascents and long descents:

"The length of each descent being 8 feet; the length of each ascent 2 feet; and the whole line being thirty-two feet. It consisted of three descents and three ascents, and a platform of one foot at each extremity, the tops of which were on an exact level with the summits of each ascent; the depth of descent at the lowest point being two inches from the highest rise, as in the railway whose curves were five feet. It is necessary to remark, that the descents in this railway, except about a foot from their lowest points, were regular inclined planes, curving off at the bottom, to render the ascents more regular, which ascents were also curved."

The following table exhibits the results of this modification of the undulating principle:

Number of Seconds.			
On the perfect level.			
Inclination 1 in 42½.			
Horizontal plane.	5 ft. curve.	Long and short curv.	Weights.
Engine alone	5	3½	4
Do. & carriage	5½	4	5
Do. with 5 lbs.	6½	4½	6
Do. 10 "	8½	5½	7
Do. 15 "	9½	6	8
Do. 20 "	13½	7½	9
Do. 25 "	18	9	10
Do. 30 "	33	11	11
Do. 35 "	12	10	12
Do. 40 "	13	11	13
Do. 45 "	15	12	14
Do. 50 "	14	10	11
Do. 55 "	14½	11	12
Do. 60 "	14½	12	13
Do. 60 " gr't difficulty	16	13	15½

Mr. Badnall states, that on trying the engine on this long and short curved railway, the reverse way, that is, by causing it to descend the short curve first, "the result was found to be the same."

It was observed in the course of the preceding experiments, that when heavy loads were passed over the railways, a considerable degree of vibration was occasioned. To get rid of this possible source of error, the different railways were next nailed firmly down upon three inch planks, and the following experiments made in the presence of Mr. Gill, of Manchester, one of the directors of the contemplated Manchester and Leeds Railway:

On a perfect level:

Number of Seconds.			
On a perfect level.			
Horizontal plane.	5 ft. curve, rise 1 in.	Irregular curve, rise 2 in.	
Engine and carriage, without load,	5½	4½	4½
Do. do. with 5 lbs.	6½	6	6
Do. do. 10 "	8½	6½	6½
Do. do. 15 "	9½	7½	7½
Do. do. 20 "	11½	8½	8½
Do. do. 25 "	13½	9½	9½
Do. do. 30 "	15½	10	9

Do. do.	32½	18½	10½	9½
Do. do.	35	20	11	10½
Do. do.	37½	21½	11½	10½
Do. do.	40	23½	12	10½
Do. do.	42½	25	12½	12
Do. do.	45	-	13½	12½
Do. do.	50	-	16	13½
Do. do.	55	-	19	17

Up an inclination of 1 in 96:

Engine and carriage, without load,	5½	4½	4½
Do. do. with 5 lbs.	6½	5½	5½
Do. do. 10 "	7½	6	6
Do. do. 15 "	8½	6½	6½
Do. do. 20 "	9	7½	7
Do. do. 25 "	11	8	7½
Do. do. 30 "	12½	8½	8
Do. do. 35 "	14	9½	9
Do. do. 40 "	15½	11	10½
Do. do. 45 "	19	12	11
Do. do. 50 "	27	12½	12
Do. do. 55 "	would not go	13	13
Do. do. 60 "	-	16½	16
Do. do. 65 "	-	18½	17

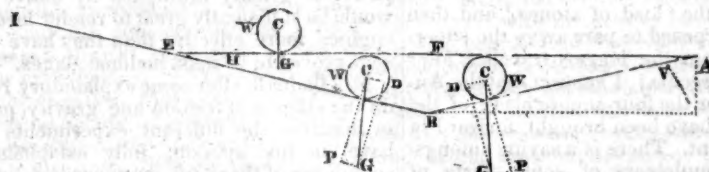
It will be observed, that the degree of speed on all the railways is much greater in these experiments than in any of those before recited. Mr. B. accounts for this by stating, that "the cord upon the spring-barrel having broken, he was compelled to re-attach it, and regulate the power of the spring accordingly." Another circumstance that will strike the reader is, that, in the experiments before made, 30 lbs. was the utmost load which could be conveyed on the horizontal railway, while in the last set of experiments 42½ lbs. were conveyed. This difference Mr. B. attributes partly "to the renewed strength of the spring," and partly "to the freedom from vibration," obtained by making fast the railways to the three inch planks. A still more remarkable discrepancy, however, is that

exhibited by the two curved railways in regard to speed, in the different sets of experiments. In the first trial, for example, made with the long and short curved railway on a level, the rates of speed with all weights under 20 lbs. were less, by 1" and 1½", than on the five feet curved railway; while in the last quoted experiments there was scarcely any perceptible difference. In the case of all weights, again, above 20 lbs., the advantage was, in the former experiments, on the side of the long and short curve railway, to the extent in some instances, of 3", while in the latter the advantage rarely exceeded 1", and in some instances only half a second. Mr. Badnall admits that these differences are not so susceptible as the others of explanation. "I confess myself in difficulty, and can only account for it by the difference in the vibration of the two railways, or some inaccuracy in levelling, especially as the depth of each curve was similar."

Be the difference, however, as it may, between the two sorts of curved railways, Mr. B. thinks he is entitled to rest satisfied with the fact, that they have both, "whether upon the level or inclines, invariably proved an unquestionable and decided superiority over the horizontal railway." He estimates this superiority as being equal to a saving of one half in point of time, and a gain of twice the power in respect of weight.

Mr. Badnall's theoretical explanation of the advantage thus gained is as follows:

"Suppose the line E A to be a horizontal railway, A B to be a descending one, and B E an ascending one, on which are placed the three wheels, W W W.



"1. Now, the amount of friction produced by the pressure of the wheel W on the plane E A, is in exact proportion to its weight, or to the weight of any vehicle which rests upon it; and upon such weight also depends the amount of attrition produced by the revolution of the axle within the nave or cylinder in which it moves.

"The reason why the amount of friction, or attrition, is proportionate to the weight of the vehicle, is because (supposing C to be the axle or centre of the wheel) the perpendicular line C G is the line of gravity.

"On a horizontal railway, therefore, the amount of pressure upon the rails, and the amount of axle and rolling friction produced by that pressure, are in exact accordance with, and altogether dependent upon, the weight of the carriages and load; and when locomotive power is employed to overcome this pressure and friction, and when a maximum velocity is attained, such velocity (the power being kept up) is uniform through spaces and times, and such pressure or friction is an *uniformly opposing power*. Moreover, as before frequently observed, the amount of load which any locomotive engine will convey is in exact accordance with the amount of its pressure upon the rails and axles; or, in other words, with the axle and rolling friction.

"2. Let us now suppose the wheel W to be traversing from A to B. From the point A, it is evident that a body would fall to T, according to the laws of bodies falling perpendicularly; and if upon the line A B we draw the perpendicular line V T, a body would descend by gravity down the plane from A to V, in the same time as it would fall, perpendicularly, from A to T; and the power of gravity, which enables it to do this, acting *equally* (practically speaking) throughout the whole descent from A to B, would produce an *uniformly accelerated motion*; in consequence of which, on the

arrival of the carriage at the point B, the velocity would (allowing for the difference of friction) be mathematically equal to what it would be at the point T, had it fallen perpendicularly from A to that point. Now, the extent of the power of gravity, or cause of the wheel W descending down the incline A B, will be easily comprehended by reference to the parallelogram D C P G: where the diagonal, C G, is the line of gravity, C P the line representing the amount of pressure on the rail, and C D the line of motion; that is, the line or power of gravity, C G, instead of acting perpendicularly, and with full intensity, on the rail, as on the line E A, becomes divided into two separate and distinct powers, viz. C D and C P; the latter, if I may so express myself, endeavoring to stop the progress of the wheel, and the former employing every effort to urge it forward; and as C D is to C P, so is the one power exactly to the other—and thus, if the carriage or wheel W weigh five tons, and if C D be one-fifth of the power or force, C P, the pressure upon the rails is reduced from five tons to four tons; and *not only reduced*, but the amount of power thus saved is actively employed in opposing the resistance offered by C P.

"Such would be the commencement of the progress of a carriage descending the incline A B by its own gravity, until, as before observed, on arriving at B, it would attain the same velocity as it would have attained at T, had it fallen perpendicularly from A to T; and if locomotive power were constantly employed to assist this force of gravity, the progress of a body down the descent would be the result of these united powers; the motion would be *uniformly accelerated*, and although the velocity would be increased in proportion to the increased power employed, yet the descent would be in proportionate accordance with the laws of falling bodies, both as to spaces and times.

"3. But we will now suppose the same carriage, W, to be propelled from a state of rest at B, to the position on the incline B E, described in the diagram. The angle F E B being equal to the angle F A B, and the line of gravity, C G, being drawn, the parallelogram C D G P is exactly equal to that described on the descending plane; consequently, C P is the line representing the amount of pressure on the rails, and C D the line of power opposing such pressure; from which it is evident that, unless prevented by some greater power than C D, the carriage would roll back to B, but if opposed by any regular and greater power, which we will call locomotive power, the carriage would rise gradually up the plane B E, with uniform velocity, and through equal spaces in equal times; for the power C D, which is a portion of the force of gravity represented by C G, being opposed by a greater power than itself, does not in this case act as an uniformly retarding power, but as an uniformly opposing power. It will also be seen that, throughout the ascent, the pressure upon the rails, and, consequently, the amount of friction, is precisely the same as it was down the descent A B, viz. as much less than it was on the horizontal E A, as the line C D to D G.

"4. But to prove the advantage to be derived by an undulating railway, we must not allow the carriage to stop at B; we will therefore suppose it to travel as far as it is able, by gravity alone, along the undulated line A B E.

"Now, as before observed, it would descend from A to B, according to the laws of falling bodies, at which point it will have attained its greatest speed, and, consequently, its greatest momentum, and it is evident that it will rise the ascent B E, as long as the force of momentum is greater than the force C D; but the instant such force of momentum, which in this case is an uniform retarding force, becomes less than the force C D, the latter would effectually operate, and the carriage W would roll back, and finally settle at the point B.

"Supposing, however, that the momentum gained by the descent to B be sufficient to advance the carriage as far up the ascent as the point H,—it is evident that, could sufficient power be then employed to overcome C D, the ascent H E would be made in much less time, with fewer revolutions of the wheels and axles, and with much less expense of power, than it would require to move up the whole ascent B E, as stated in position 3.

"We will now suppose that an assistant power, equal to the available power C D, be employed to propel the carriage W along the undulation A B E, and that such power were withdrawn at the point B,—it becomes evident that, as gravity alone enabled the carriage to rise the ascent as far as H, which is more than one-half of the whole ascent, now that double power is employed, double momentum at the point B will be the result; and the power C D will thus effectually be opposed up the whole ascent B E. If this be true, how much more effectually will the power C D be counteracted if the assistant power be continued up the whole ascent B E!

"From this reasoning, it appears to me indisputable, as decidedly proved by experiment, that not only can a given load be conveyed along a curved line in very much less time than upon a horizontal plane, or a very much greater weight in the same time, but that loads which no locomotive power could move on the horizontal plane E A, would, impelled by gravity, assisted by other active power, descend down A B, and rise the ascent B E with facility; and it will be also evident, that whatever power may be left on arriving at the point E, will be the power of ascending the further incline E I; to which surplus must of course be added the continued active power employed to oppose C D.

"5. It must be remarked, that although the disposable power of gravity in opposition to pressure is only as C D to C P, yet this is no criterion of the extent of advantage gained in speed; in fact, C D may as properly be stated to represent the saving in friction. In whatever light, however, it may be viewed, C D represents

a constant and equal power throughout the whole descent; but the spaces passed over down that descent, in consequence of such power, are not equal in equal times, but, owing to accelerated velocity, as the squares of the times. Supposing, for instance, A V to be 10 yards, and the carriage was one second in reaching V, and allow the same space to be travelled over on the horizontal plane in the same time, at maximum velocity,—now, on the latter, the carriage would travel 30 yards in 3 seconds; but down A B it would travel 90 yards in 3 seconds; because $3 \times 3 \times 10 = 90$; and this velocity, although retarding up the ascent, if assisted by an equal power to that employed on the horizontal plane, would be so kept up as to arrive at a given distance in far less time than it could be done with an average load on the horizontal plane. Supposing, for instance, the horizontal line E A were 175 yards long, the descent A B 90 yards, and the ascent B E 90 yards, making the undulating line 180 yards, and that locomotive power were employed sufficient to overcome the friction and the resistance of the atmosphere on both lines, and to move a carriage along E A at maximum velocity, 10 yards per second, it is obvious, that the time required to travel from E to A would be seventeen and a half seconds, because

$$\frac{175}{10} = 17\frac{1}{2}.$$

"Let us now apply the same power to the same carriage travelling along the undulation A B E, and take 10 yards as the space travelled over in the first second down the descent A B, it is obvious that it would reach the point B, or, in other words, traverse the 90 yards represented by A B in 3 seconds; because, according to the laws of descending bodies, $3 \times 3 \times 10 = 90$. This being admitted, and even presuming that the power employed upon the ascending part of the undulation, were only just sufficient to overcome the friction and resistance of the atmosphere, the carriage would naturally, as proved by the action of the pendulum, rise the ascent B E in the precise time it occupied in traversing from A to B. Hence, if a given power be employed, sufficient to overcome the friction and resistance of the atmosphere, and to impel a load 10 yards in the first second, upon an undulating line, such as A B E, 180 yards in length, the whole distance, if the power be constantly kept up, will be traversed in less than six seconds; whereas, if a given power be employed sufficient to overcome the friction and resistance of atmosphere, and to impel a load 10 yards in the first second of time, at maximum velocity, upon a horizontal line, such as E A, 175 yards in length, the whole distance cannot be traversed in less time than $17\frac{1}{2}$ seconds. Thus, if we ascertain the maximum velocity at which a body can be impelled upon a horizontal line in the first second, and down the descending part of a given curve in the first second, such power being sufficient to overcome friction in both cases, the comparative time occupied in traversing each distance is easily determinable: the difference in advantage varying in proportion to the length and depth of undulation, as compared with the length of the horizontal line. Nor must it be overlooked, in considering this subject, that a much greater load can be conveyed along an undulating line than along a horizontal one. The axle and rolling friction to be overcome is necessarily less upon the former than upon the latter, and the fulcrum presented to the effective power of steam, down the descending part of each undulation, is a most important object of advantage. It will be seen, that in this explanation I have calculated the velocity of a body traversing a curve, according to the laws which would govern its descent down a regular inclined plane; there would of course be some difference, but in this instance it cannot be material to describe it.

In an appendix to the treatise, two letters are given from Mr. Robert Stephenson, senior, to Mr. Badnall, in which Mr. S. fully admits the superiority of the undulating railway over the horizontal one, and in at some pains to account for it on practical grounds. He concludes with

expressing an opinion, that it "will require even a longer railway than the Liverpool and Manchester one, to prove the extent of its value."

To the Editor of the New York American:

Sir—I have heard gentlemen, who are unacquainted with Macadamized roads, say that they cannot be, with propriety or economy, substituted for Paved streets. Being a young and modest man, as well as almost a stranger in this city, I do not desire to put myself in opposition to gentlemen of so much intelligence and character, but with your permission I will quote the language of one of the most experienced road-makers now living, who, by the by, was also once a resident of this city, and may therefore perhaps be the more entitled to credit—I refer, Sir, to JOHN LOUPON McADAMS Esq. of Bristol in England.

In reply to the question "have you in any instance tried the experiment of converting paved streets into roads?" put by one of the committee of the House of Commons, appointed to collect information upon the subject of road making—he said "I have in several instances taken up small pieces of pavement which I found upon the several road trusts, and substituted road. What has been the effect of the conversion of the pavement into roads? Answer. The expense has considerably diminished and the facility of travelling very considerably increased." He further says in relation to the mode of constructing roads, "the true principle of road-making is that the road should be considered as an artificial flooring, forming a strong smooth and solid surface, capable of carrying great weight, without obstruction to the wheels."—The road is to be made of broken stone without mixture of earth, clay, chalk, or any other matter which will imbibe water, or be affected by frost.

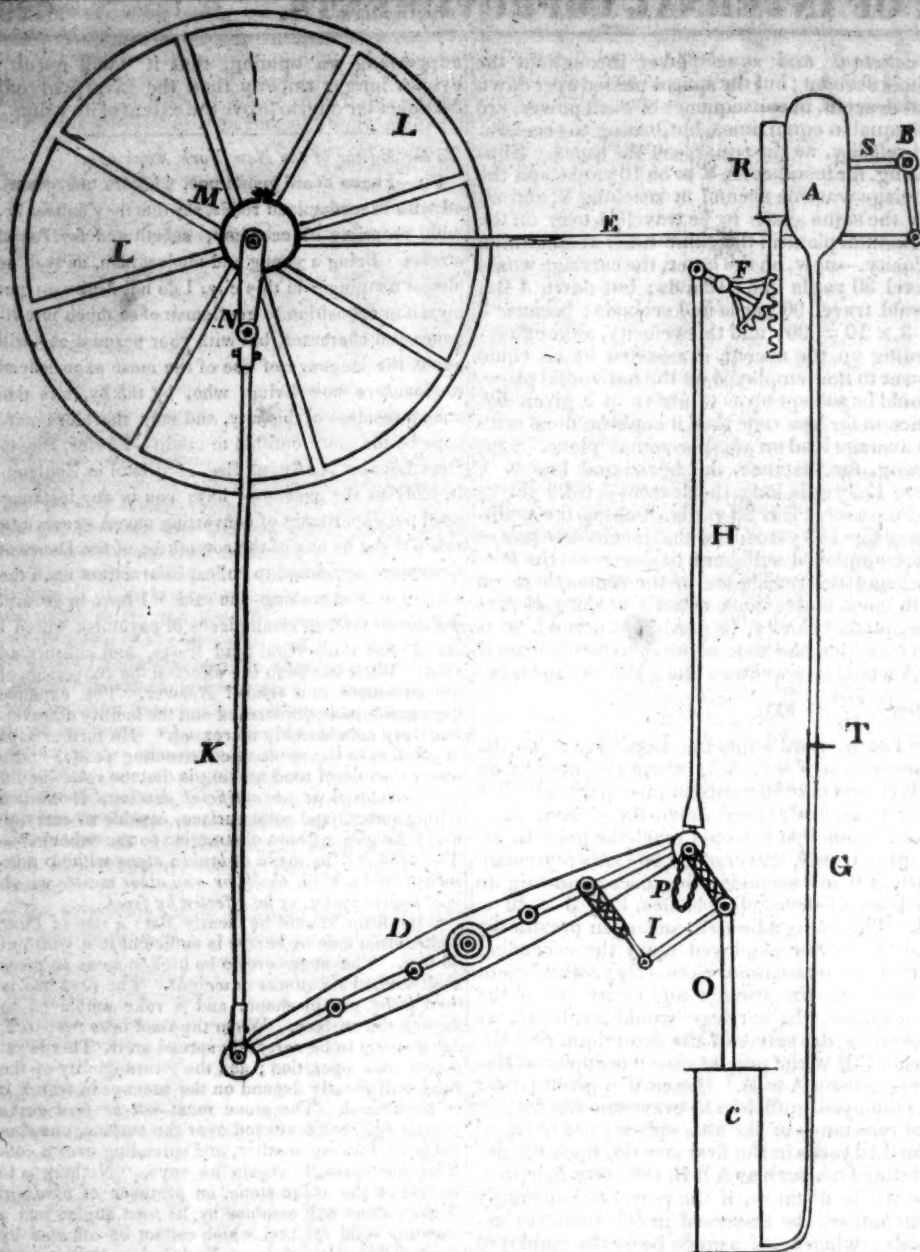
"Its form should be nearly flat: a rise of three inches from side to centre is sufficient in a width of 30 feet. The stone are to be broken so as no piece shall exceed six ounces in weight. The road bed is then to be put in shape, and a rake employed to smooth the surface. When the road is so prepared, the stone is to be carefully spread on it. This is rather a nice operation; and the future quality of the road will greatly depend on the manner in which it is performed. The stone must not be laid on in shovels full, but scattered over the surface, one shovel full following another, and spreading over a considerable space." Again he says, "Nothing is to be laid on the clean stone, on pretence of binding. Broken stone will combine by its own angles into a smooth, solid surface, which cannot be affected by vicissitudes of weather, or displaced by the action of wheels, which will pass over it without a jolt, and consequently without injury." Again, Sir, in his communication to the President of the Board of Agriculture of England, he says,—but I will omit what he says in that document until another time, as I am aware that short communications, upon almost any subject, are most likely to be read during the present busy season.

With your permission, therefore, Sir, I will endeavor to show, in another communication, wherein the present experiment in Broadway, although denominated a McAdamized street, differs widely from Mr. McAdam's system of road-making. M.

The steam engines are now in operation on the Camden and Amboy Rail Road. Passengers are conveyed to Philadelphia by this route, in seven hours.

We alluded a short time since to the successful trials of steam navigation made on the Chesapeake and Delaware Canal, which have been since so confirmed that it is expected that after this season steam power will altogether supersede that of horses, on the Canal. The boat used is 88 1-2 feet long on deck, 10 feet beam, and draws 12 inches of water. Her boiler is 6 feet long by 3 feet in diameter; it is round and filled with tubes, the cylinder is 8 1-2 inches in diameter with a stroke piston of 2 1-2 feet. When running at a speed of 8 miles per hour, she consumes 314 lbs. of pine wood in that time, and at that speed the wash on the banks is only one-third of that made by the passenger barges when at the same speed.—[Philad. Chron.]

A steam-vessel of fifty-horse power has lately been launched at Vienna. This vessel is destined to navigate the Danube, and supply the capital with cattle from Hungary.



Suggestion for a New Motive Power. By G. N. To the Editor of the Mechanics' Magazine.

SIR,—As it is a professed object of your valuable Magazine to disseminate the knowledge of new discoveries, inventions, and improvements, I submit to your consideration the following description of a Hydro-pneumatic Engine, which, to me, is entirely original. In so doing I am not about to attribute to myself the discovery of any new principle, but think I can, with perfect confidence, lay claim to any advantages that may arise from a successful application of long known principles. It may not be improper here to remark, that, although I have not given it a fair trial, yet the experiment was enough to convince me of its success and utility as a motive power to most kinds of machinery.

C is a strong cast iron cylinder, similar to that of a steam engine on the atmospheric plan, open at the top. G is a vertical pipe of small diameter, whose height cannot exceed 32 feet, joined to the cylinder C. O is a piston rod, attached to a piston packed in the usual manner. D is a working beam, attached by the parallel motion to the piston rod, O, at one extremity, and at the other to the shackle bar, K, which works the ba-

lance wheel, L, by the crank N. M is an eccentric. E is a connecting rod, worked by the eccentric M. A is an air-tight sphere, attached to the top of the vertical pipe G. H is a rod, which moves a slide in the chamber R, by the cogs at F. I is the parallel motion. P is a chain connecting the working beam and rod H. S is a pipe leading from an iron retort to the sphere A. B is a valve moved by the eccentric M, and rod E, the use of which will be hereafter explained.

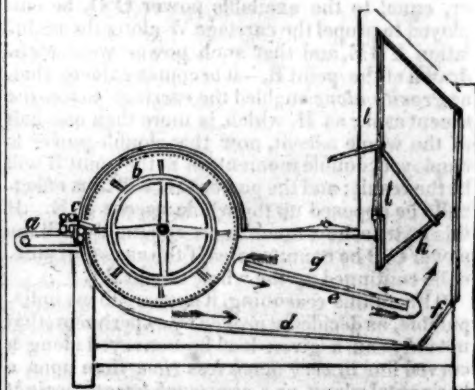
The retort is furnished with a furnace for the forming of carburated hydrogen gas, being filled with coal or other substances suitable for the purpose.

Having now explained the different parts of this engine, and their uses, I come now to the "modus operandi," the manner of setting it to work. Water is poured into the vertical pipe, G, till it elevates the piston on the principle of Bramah's Press. I must state here that there is a certain proportion existing between the vertical pipe, G, and cylinder, which must be found by actual experiment. The water should not be higher than the mark T, for instance, when the piston is elevated. Now, it is evident that the area of pipe above the mark T should be equal to the space below the piston, and the

pipe should not exceed 32 feet in height, as before stated. As soon as the piston reaches the top of the cylinder, the working beam strikes the rod H, and shuts the slide in the chamber R, which was before open, rendering the sphere A air-tight. The next object is to depress the piston. The retort and pipe S being now filled with gas, an assistant fires the gas, and with a winch, for the purpose, turns the jet into the sphere A. The burning of the gas forms a vacuum: the water in the tube is raised, and the piston depressed. When the piston reaches the bottom of the cylinder, the chain P opens the valve at R, destroys the vacuum, and the water returning to its former position elevates the piston, strikes the rod, closes the slide. At the same instant the eccentric M throws in the jet of gas, a vacuum is re-produced. The machinery for throwing the gas in and out is very imperfect, and perhaps may not be clearly understood. The machinery here used is similar to that of Brown's Pneumatic Engine. I must refer the reader to a description of this engine in Nicholson's Operative Mechanic, where it is clearly explained. This engine might, perhaps, be improved by placing a cylinder at each extremity of the working beam. I think it may also be worked by mercury. But the engine must be much smaller in size; as mercury is twelve times heavier than water, the engine should be of such dimensions that its vertical pipe should not exceed 32 inches.

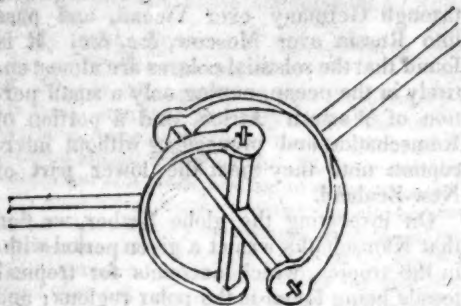
I shall be glad to see any remarks your readers may see fit to publish respecting the above. Yours, &c. G. N.

METHOD OF CLEARING FUR FOR MAKING HATS.—The preparation of hats is one of the principal uses to which fur is put in this country; we therefore select the present article for describing the mode of clearing the fur for that purpose. An account of the complete formation of a hat will be given in a future number. The patent improvements to which we are going to call the reader's attention are exhibited in the diagram beneath, and are intended to separate the finer portions of the fur from those that are less costly.



An endless web, or feeding cloth, is shown at a. It is extended on two rollers, upon which web the materials to be cleared and separated are placed, and by which they are carried forward into the machine. b is a hollow cylinder, with a flange at each extremity. From the rims of these flanges a number of cords of catgut are extended and made tight. A peg or pin is so placed, the cords are put in vibration as they pass round, and thus take the material from the feeding cloth. To insure a requisite current of air for carrying the fur onward, vanes are placed

in the cylinder *b*. The precise amount of current is determined by the regulator *e*, and the board *f*. The portions that are not sufficiently cleared are returned in the direction of the arrow towards *g*, while that which is completed goes out at *h*, and from thence into a large upper chamber.—[British Cyclopædia.]



DR. HOOK'S JOINTS.—The various joints employed in the human frame are all of the most perfect kind, though they differ considerably in their structure. The mechanic has, however, copied but two, the *hinge*, and the *ball and socket*. The hinge-joint is used for doors, and those places generally which require motion but in one direction. The ball and socket, on the contrary, admits of a variety of positions. The expense attendant on constructing the latter is very considerable, and to obviate this inconvenience the *Hook's-joint*, represented in the accompanying engraving, may be employed. It was originally invented by Dr. Hook, and is found very useful in communicating a rotatory motion from the principal axis of a machine to the more distant wheels it is intended to put in operation.

It consists of two semicircles, joined by a metal cross; and, if either of the semicircles be turned, a similar motion is communicated to the other. The same species of universal joint is employed to support a compass at sea.—[British Cyclopædia.]



Ingenuity of the Spider. [Communicated for the New-York Farmer, and American Gardener's Magazine.]

MR. EDITOR,—I have thought it might be interesting to your readers, and consequently to yourself, to read the following statement of a fact which came within my observation recently in Brooklyn.

On passing along one of my garden walks the other day, I discovered a spider's web constructed rather singularly. It was suspended from a cherry-tree, being attached to the trunk, and running out with numerous fastenings, at different distances, on a large limb, which rose at an angle of perhaps 30 degrees from the earth. This you may suppose would make the web of rather a narrow triangle, and one not likely to bring the proprietor much custom. To enlarge its sweep,

however, the spider had, by some means or other, formed a corner downward, and suspended from it a little stone, say half an inch in length, three-eighths in width; and one-eighth in thickness, well secured in parachute style, and hanging some eight or ten inches below. This weight kept the web taut, and swung slightly as the wind affected it; and there it remained for several days. I had some curiosity to know more of the projector of this contrivance, and on casting my eye near the tree, where the thickening fabric indicated that he kept his counting-room, I discovered a spider with a body nearly spherical, and of the size of a small cherry, about half an inch through, with crab-legs, and in all respects appearing ready for business. I touched him slightly with a little stick, upon which he made a motion toward it so sudden and so impassioned as well nigh made me jump, at the same time striking the stick in such a manner that inclines me to think, had it been animated, it would have felt his venom.

I am ignorant of the branch of natural history, as well as of some others, and know not the class to which this spider may belong; nor whether this mode of securing a web may not have been frequently observed by others. But the case to me being new, I submit it to you, with the hope that it may elicit remarks from those who are better informed than myself on the subject.

EWBANK'S PATENT TINNED LEADEN PIPES.—We lately copied from a London paper a notice of a patent taken out in England by Messrs. Warner, for the manufacture of leaden pipes coated with tin. The invention struck us at the time as one of great value, and we have since learned with pleasure that it was made in this city: the Messrs. Warner having purchased the right for England of the inventor, Mr. Thos. Ewbank, of New-York, who has a patent for the United States.

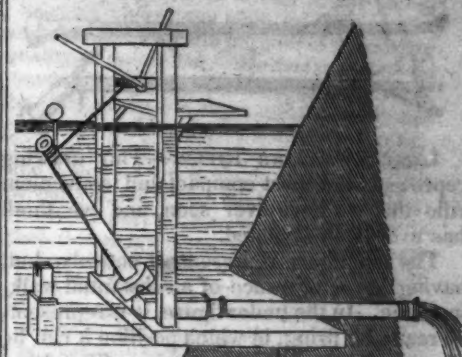
It is well known to persons, who take pains to observe, as well as to the scientific, that leaden pipes are corroded by many of the fluids which pass through them, and that the small portion of acid which it often contains, in the course of time dissolves a perceptible quantity. Beer pipes made of this metal are often found deeply corroded; for the acetate of lead, which is a most poisonous chemical salt, is easily soluble, and is taken off by the fluid which aids in its formation. Mr. Ewbank's pipes are effectually guarded against this source of danger, by being lined within and without with pure tin. It is of great importance to know also that leaden vessels for culinary use may be protected from the action of acids in the same manner.

Patents, we understand, have been heretofore taken out in England, for coating lead with tin; but the processes rendered the expense too great, and they have been useless. Mr. Ewbank, on the contrary, is able to afford his pipes at a small advance only on the price of those made entirely of lead, which will greatly facilitate their general introduction.

DRAINING.—[We insert the following cuts and descriptions as subjects of reflection for farmers and mechanics. There is a wide field for mechanical ingenuity in rural pursuits.]

The inconvenience of an over-moist soil is but little felt in the neighborhood of the British metropolis. There are, however, many parts

of England, in which draining becomes a most important desideratum. The first thing to be attended to is the elevation of the part to be drained: and as in large drains it becomes necessary to keep the channels themselves open, it is advisable to employ an apparatus similar to that represented in the annexed engraving, to accomplish this object.



Now, if we suppose the place to be drained situated in the neighborhood of the sea, it will not be advisable to admit a free communication at all times; but it requires a free passage of water at stated periods, for the purpose of cleansing the drain, and at different heights. The diagonal tube, supported by the rope coiled round the cylinder, may be readily placed at any required angle. When we wish the water in the drain not to exceed a certain height, we have only to regulate the winch accordingly.

We have thus briefly noticed the drain on a large scale. A very simple mode of draining land, which is wet merely from the retentive nature of the soil, and which has been practised with success, consists in adding to the felly of a six-inch cart wheel, a piece of wood upon which is a triangular rim of iron. That side of the cart containing this prepared wheel, is then loaded, till the piece of iron indents the soil to the depth of six or eight inches. These furrows are made in lines from five to ten yards asunder, the grass is merely pressed down, but not destroyed, and they generally grow up in the course of the year. They should, therefore, be made annually, at the approach of winter; but the work is so easily executed, that a single person, with two old horses, will go over from ten to twenty acres in eight hours.

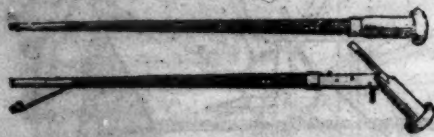
DRAINING PLOUGH.—This is a very important agricultural implement, of which we give a diagram.



We may suppose a case in which its powers would be indispensable. It becomes necessary to cut a trench for the passage of water; and the furrow being too deep for the common process, the anchor or hook, *l*, is inserted in the ground. We have thus a fixed point for resisting the action of the pulley, *k*. If power be now applied to the handle at top, it communicates motion to the wheel, *A*, with an enormous increase of power, and the acting portions of the plough, *c d*, are forced through the soil. The arrangement at *a b c*, enables the conductor to give the required depth to the furrow. It will be obvious that the pulley, *g*, by resting on the ground, tends to diminish friction.—[British Cyclopædia.]

SCHOOLS FOR MECHANICS, &c.—The king of Bavaria issued a rescript in February last, directing the establishment of this description of popular schools in every quarter of his dominions, with the benevolent intention of affording the humblest workman an opportunity of receiving such instruction as

may fit him for his calling. He permits the districts to name the masters of these schools for his approval. In large towns the course of instruction will take a wider range, and be given in "Colleges of Industry."



LAMBERT'S CANE RIFLE.—This drawing represents the most compact and convenient rifle that we have ever seen, and we think has ever been invented.

The top figure represents it entirely shut, having the appearance of a substantial walking cane. In the under figure, it is represented ready for firing, in which position it can be placed almost instantaneously. The head is drawn out sufficiently far for the socket or ferule at the muzzle, (which is attached by a strap of metal in the side of the socket, with a hinge at the extremity,) to fall off by its own weight, (see drawing.) The cock is a bent lever of steel, made to turn and move on a hollow pivot pin, containing a chamber for powder, which is continued through the screw by which it is inserted, and opens into the barrel. The trigger lays in the plate which covers the lower side of the cock. By bending down the head of the cane (see drawing) the lower edge of the slide plate* catches a small dog of steel, with a notch or tooth in it, which rests on a spring let into the foot of the cock, and thus elevates the long arm of it. The head thus bent serves for a breech, by which the gun is conveniently held and aimed, by looking through a small slit in the cock over the sight in the ferule.

* By "slide plate" we mean a cylindrical metal plate of even diameter, about three inches in length, which is inserted in the head of the cane, and which encloses the lock when it is shut up.

M. GUESNEY'S NEW SYSTEM OF PHILOSOPHY.—Sir John Byerley has recently introduced into England a globe of a new and important character, invented by M. Guesney, an advocate of Coutances in Normandy, and described by him in a work entitled *Mouvement Heliacque*, Paris, 1825. Many of the more important phenomena of geology and physical geography have given birth to the wildest theories. M. G. being led to regard them as produced by the precession of the equinoxes, attempted their solution on scientific bases. Unfortunately M. G. is a sworn enemy of the Newtonian system, and while his whole theory is grounded on the precession of the equinoxes, he denies the cause of that precession, and affirms that the earth is perfectly spherical! His work abounds with errors quite as easy to refute, but he has the great and exclusive merit of having first had the idea of constructing a terrestrial globe in harmony with the celestial, by tracing the system of the ecliptic upon it as upon the celestial globe.

We may here observe, that the whole of the appearances in the heavens are to be referred to the two motions of the earth. The polar star is not polar to any planet but our own; and the poles of the ecliptic in the folds of Draco and in the Dorado are only so in reference to the earth. The axes of the world, as they are called, or those of the ecliptic and the equator, are two lines crossing each other in the centre of the earth,

at an angle of $23^{\circ} 28'$, and extending to the heavens; but, we repeat it, they do not pass through the centres of any other planets; and are, therefore, to be referred to the earth alone.

The points where these lines pass through the surface of the earth are the poles on which its motions are performed, the movement of rotation, or diurnal motion, on the poles of the equator, and the movement of translation, or annual motion, on the poles of the ecliptic. M. Guesney's great difficulty was to fix the seat of the poles of the ecliptic on the terrestrial globe. In this he received no aid from astronomers, who declare the ecliptic to be a circle in the heavens, and to have no reference whatever to the earth, forgetting that, as the plane of the ecliptic passes through the centre of the earth, it must cut its surface somewhere: to determine those points, then, and consequently the poles of the terrestrial ecliptic, was the object of M. Guesney. He found that the magnetic needle and its dip were both directed to one point on the globe near the polar circle at the back of Iceland, precisely on the first meridian adopted by order of Louis XIII., passing through the island of Ferro. He found that, by supposing the seat of the pole of the ecliptic there, it gave a satisfactory solution of many hitherto inexplicable phenomena; he therefore fixed it there by approximation. Sir J. B. appears to be the only scientific person who has taken the trouble to sift the wheat from the chaff, and on this basis to erect a theory embracing the principal phenomena. Not, however, satisfied with approximation, where mathematical accuracy was evidently attainable, he endeavored to ascertain precisely the poles of the terrestrial ecliptic, when, fortunately, he found that Laplace, pursuing another object, had already solved the problem.

To avoid the confusion of every maritime nation using a different first meridian, Laplace wished them to take that "of which the midnight corresponds with the instant when the great axis of the ecliptic is perpendicular to the right line of intersection of the equator and ecliptic, which meridian is $166^{\circ} 46' 12''$ east of Paris," or $109^{\circ} 6' 27''$ east of Greenwich Observatory.

On the authority, therefore, of the greatest astronomer of any age, Sir J. B. has had a terrestrial globe prepared by Mr. Newton, with the system of the ecliptic described on the poles as fixed by Laplace; the north pole of the ecliptic being in the polar circle, and the winter solstitial colure, or first meridian, $10^{\circ} 53' 35''$ west of Greenwich. A circle drawn from this pole as a centre, on a radius of $23^{\circ} 28'$, will pass through the pole of the earth, and trace its line of motion round the pole of the ecliptic, in 25,920 years.

This revolution of the pole of the equator round that of the ecliptic is admitted by all astronomers to take place in the heavens, but not in the earth. They admit, too, that the axis of the ecliptic is fixed and immovable, the ecliptic being so; but they have not yet shown how a right line intersecting another fixed right line at a given angle shall move round the latter at its extremity, and not at a given distance from the point of intersection! Assuming, then, that the pole of the equator revolves round the pole of the terrestrial ecliptic, it remains to show a few of the terrestrial effects of such motion.

By inspection of the globe, we find that the pole of the equator is now at nearly its

greatest distance from western Europe; that it is advancing at the rate of about 394 yards annually on North America, and will pass through Lancaster Straits, Hudson Straits, over Resolution Isle, enter Europe at Cape Finisterre, pass over Bilbao and the northern frontier of Spain, through France over Toulouse, through Lombardy over Milan, through Germany over Vienna, and pass into Russia over Moscow, &c. &c. It is found that the solstitial colures are almost entirely in the ocean, cutting only a small portion of Western Africa, and a portion of Kamschatka, and proceeding without interruption until they meet the lower part of New-Zealand.

On inspecting the globe farther, we find that Kamschatka was at a given period within the tropics, which accounts for tropical fossils being found in the polar regions; and that the Oural Mountains were formerly in the latitude of Mexico, which explains why the precious metals are found in such high latitudes, and why the same precious stones are found in Mexico and the Oural Mountains. We find also that the direction of the straits in the higher latitudes run from west to east, or in the direction of the waters of the pole. The debris of mountains are found in the same direction in England, France, Italy, Scandinavia, &c. The plains of Lombardy are covered with Alpine debris, and in Scandinavia, masses of 50,000 tons have been transported, (Dr. Buckland fancies on the back of an iceberg,) by the immense force of the Polar Ocean.

The radius of the earth at the equator is about 65,000 feet greater than the polar radius, owing to the centrifugal force (which is as the radii of the parallels of latitude). And, as the pole moves through $46^{\circ} 56'$ of latitude in 12,960 years, in that lapse of time one part of the equator will be carried $46^{\circ} 56'$ into the southern hemisphere. At that period all western Europe will be buried under the waters of the pole (forming the period of a deluge), as it was at three distinct periods, at intervals of nearly 26,000 years; which ascertains the existence of the globe in its present state (which was probable its primitive) for 70,000 years. This change of the plane of the equator is probably the cause of all the great phenomena; it changes the latitude from polar to tropical regions, and thus renders a change in the action of the centrifugal force; and from whatever part the pole is receding, the centrifugal force is increasing, which produces an alteration of surface; in whatever place it is advancing there is a consequent depression. There is thus a daily tendency to elevation in some parts, and to depression in others; and to this cause Sir J. B. attributes earthquakes and volcanic action. According to this theory, as the elevation and depression must be greatest in the direction of the motion of the pole, so ought the degree of volcanic action to be. On inspecting the globe, we find this to be the case, and that volcanic action is greatest on the meridians of South America and the Philippine Isles. Where no elements of combustion exist we have eruptions of mud, &c.

The difference between the earth's radius at the equator and at 45° is 5,340 French toises, or about 33,000 English feet. Now, the equator changing its position nearly 47° , it follows that in the solstitial colure the present position of the equator will be depressed at least 33,000 feet. This will readily account

for marine fossils being found in Chimborazo, 15,500 feet above the surface of the ocean.

The above is a brief outline of the system to which Sir John Byerley intends shortly to call the attention of the public. He courts inquiry; for, if the theory be well founded, it will entirely re-model the science of physical geography.—[British Cyclopædia.]

Babbage on the Economy of Manufactures.

[Continued from page 600.]

258. *Slide of Alpnach*.—Amongst the forests which flank many of the lofty mountains of Switzerland, some of the finest timber is found in positions almost inaccessible. The expense of roads, even if it were possible to make them in such situations, would prevent the inhabitants from deriving any advantages from these almost inexhaustible supplies. Placed by nature at a considerable elevation above the spot on which they are required, they are precisely in fit circumstances for the application of machinery; and the inhabitants constantly avail themselves of it, to enable the force of gravity to relieve them from some portion of their labor. The inclined planes which they have established in various forests, by which the timber has been sent down to the water-courses, must have excited the admiration of every traveller; and these slides, in addition to the merit of simplicity, have that of economy, as their construction requires scarcely any thing beyond the material which grows upon the spot. Of all these specimens of carpentry, the Slide of Alpnach was by far the most considerable, both from its great length and from the almost inaccessible position from which it descended. The following is the description of that work given in Gilbert's Annalen, 1819, and translated in the second volume of Brewster's Journal:

"For many centuries, the rugged flanks and the deep gorges of Mount Pilatus were covered with impenetrable forests. Lofty precipices encircled them on all sides. Even the daring hunters were scarcely able to reach them; and the inhabitants of the valley had never conceived the idea of disturbing them with the axe. These immense forests were therefore permitted to grow and to perish, without being of the least utility to man, till a foreigner, conducted into their wild recesses in the pursuit of the chamois, was struck with wonder at the sight, and directed the attention of several Swiss gentlemen to the extent and superiority of the timber. The most intelligent and skilful individuals, however, considered it quite impracticable to avail themselves of such inaccessible stores. It was not till November, 1816, that M. Rupp, and three Swiss gentlemen, entertaining more sanguine hopes, drew up the plan of a slide, founded on trigonometrical measurements. Having purchased a certain extent of the forests from the commune of Alpnach for 6,000 crowns, they began the construction of the slide, and completed it in the spring of 1818.

"The slide of Alpnach is formed entirely of about 25,000 large pine trees, deprived of their bark, and united together in a very ingenious manner, without the aid of iron. It occupied about 160 workmen during 18 months, and cost nearly 100,000 francs, or £4,250. It is about 3 leagues, or 44,000 English feet long, and terminates in the Lake of Lucerne. It has the form of a trough, about six feet broad, and from three to six feet deep. Its bottom is formed of three trees, the middle one of which has a groove cut out in the direction of its length, for receiving small rills of water, which are conducted into it from various places, for the purpose of diminishing the friction. The whole of the slide is sustained by about two thousand supports; and in many places it is attached, in a very ingenious manner, to the rugged precipices of granite.

"The direction of the slide is sometimes straight, and sometimes zig-zag, with an inclination of from ten to eighteen degrees. It is often carried along the sides of hills and the flanks of precipitous rocks, and sometimes passes over their summits. Occasionally it

goes under ground, and at other times it is conducted over the deep gorges by scaffoldings 120 feet in height.

"The boldness which characterizes this work, the sagacity displayed in all its arrangements, and the skill of the engineer, have excited the wonder of every person who has seen it. Before any step could be taken in its erection, it was necessary to cut several thousand trees to obtain a passage through the impenetrable thickets; and, as the workmen advanced, men were posted at certain distances, in order to point out the road for their return, and to discover, in the gorges, the places where the piles of wood had been established. M. Rupp was himself obliged, more than once, to be suspended by cords, in order to descend precipices many hundred feet high; and in the first months of the undertaking, he was attacked with a violent fever, which deprived him of the power of superintending his workmen. Nothing, however, could diminish his invincible perseverance. He was carried every day to the mountain in a barrow, to direct the labors of the workmen, which was absolutely necessary, as he had scarcely two good carpenters among them all—the rest having been hired by accident, without any of the knowledge which such an undertaking required. M. Rupp had also to contend against the prejudices of the peasantry. He was supposed to have communion with the devil. He was charged with heresy, and every obstacle was thrown in the way of an enterprise which they regarded as absurd and impracticable. All these difficulties, however, were surmounted, and he had at last the satisfaction of observing the trees descend from the mountain with the rapidity of lightning. The larger pines, which were about a hundred feet long, and ten inches thick at their smaller extremity, ran through the space of three leagues, or nearly nine miles, in two minutes and a half, and during their descent they appeared to be only a few feet in length. The arrangements for this part of the operation were extremely simple. From the lower end of the slide to the upper end, where the trees were introduced, workmen were posted at regular distances, and as soon as every thing was ready, the workman at the lower end of the slide cried out to the one above him, "*Lachez*" (Let go). The cry was repeated from one to another, and reached the top of the slide in three minutes. The workman at the top of the slide then cried out to the one below him, "*Il vient*" (It comes), and the tree was instantly launched down the slide, preceded by the cry which was repeated from post to post. As soon as the tree had reached the bottom, and plunged into the lake, the cry of *Lachez* was repeated as before, and a new tree was launched in a similar manner. By these means a tree descended every five or six minutes, provided no accident happened to the slides, which sometimes took place, but which was instantly repaired when it did.

"In order to show the enormous force which the trees acquired from the great velocity of their descent, M. Rupp made arrangements for causing some of the trees to spring from the slide. They penetrated by their thickest extremities no less than from eighteen to twenty-four feet into the earth; and one of the trees having by accident struck against the other, it instantly cleft it through its whole length, as if it had been struck by lightning.

"After the trees had descended the slide, they were collected into rafts upon the lake, and conducted to Lucerne. From thence they descended the Reuss, then the Aar to near Brugg, afterwards to Waldshut by the Rhine, then to Basle, and even to the sea, when it was necessary.

"In order that none of the small wood might be lost, M. Rupp established in the forest large manufactories of charcoal. He erected magazines for preserving it when manufactured, and had made arrangements for the construction of barrels for the purpose of carrying it to the market. In winter, when the slide was covered with snow, the barrels were made to descend

on a kind of sledge. The wood which was not fit for being carbonized, was heaped up and burnt, and the ashes packed up and carried away, during the winter.

"A few days before the author of the preceding account visited the slide, an inspector of the navy had come for the purpose of examining the quality of the timber. He declared that he had never seen any timber that was so strong, so fine, and of such a size; and he concluded an advantageous bargain for a thousand trees.

"Such is a brief account of a work undertaken and executed by a single individual, and which has excited a very high degree of interest in every part of Europe. We regret to add that this magnificent structure no longer exists, and that scarcely a trace of it is to be seen upon the flanks of Mount Pilatus. Political circumstances having taken away the principal source of the demand for timber, and no other market having been found, the operation of cutting and transporting the trees necessarily ceased."

Professor Playfair, who visited this singular slide, states that six minutes was the usual time occupied in the descent of a tree; but that, in wet weather, it reached the lake in three minutes.

259. One of the most common effects of the introduction of new machinery into manufactures, is to drive out of employment much of the hand-labor which was previously used. This, for a time, produces a considerable suffering amongst the working classes; and it is of great importance for their happiness that they should be aware of the effects, and that they should be enabled to foresee them at an early period, in order to diminish as much as possible their injurious results. It is almost the invariable consequence of such improvements, ultimately to cause a greater demand for labor; and often the new labor requires a higher degree of skill than the old; but, unfortunately, the class of persons who have been driven out of the old employment are not always qualified for the new one; and in all cases, a considerable time elapses before the whole of their labor is wanted. One very important inquiry which this subject presents is the question—*Whether it is for the interest of the working classes, that any improved machinery should be so perfect as to defy the competition of hand-labor, and that they should be at once driven out of the trade by it; or whether it is more advantageous for them to be gradually forced to quit the trade by the slow and successive advances of the machine?* The suffering which arises from a quick transition is undoubtedly more intense; but it is also much less permanent than that which results from the slower process. If the competition is perceived at once to be perfectly hopeless, the workman will at once set himself to learn a new department of his art. The use of power-looms is an instance of a slow change, which has gradually been diminishing the wages of the hand-weavers. It appears that the number of hand-looms in use in England and Scotland in 1830 was about 240,000; nearly the same number existed in the year 1820; whereas the number of power-looms which in 1820 was 14,000, had in 1830 increased to 55,000. When it is considered that each of these looms at that time did as much work as three hand-looms, the increased amount of work produced was equal to that of 123,000 hand-looms. During the whole of this period the wages and employment of hand-loom weavers has been very precarious.

260. Increased intelligence amongst the working classes may enable them to foresee some of those improvements which are likely for a time to affect the value of their labor; and the assistance of Savings Banks and Friendly Societies, (the advantages of which can never be too frequently, or too strongly, pressed upon their attention,) may be of some avail in remedying the evil: but it seems also desirable to suggest to them, that a diversity of employment amongst the members of one family, will tend, in some measure, to mitigate the privations which arise from fluctuation in the value of labor.

NEW-YORK AMERICAN.

SEPTEMBER 28, 30, OCTOBER 1, 2, 3, 4—1833.

LITERARY NOTICES.

COPLAS DE DON JORGE MANRIQUE; translated from the Spanish, with an introductory essay on the moral and devotional poetry of Spain, by HENRY W. LONGFELLOW, Prof. of Mod. Lang. and Lit. in Bowdoin College: Boston, ALLEN & TICKNOR.—We are almost disposed to speak of Prof. Longfellow as the Bowring of America—so great and various is his proficiency in modern languages, as evinced by several publications heretofore, and particularly by this now before us; in which his talents as a poet not less than those as a linguist are so advantageously displayed.

The little poem here translated was a tribute of filial affection and regret on the death of his father. *Don Jorge Manrique*, the author, flourished in the last half of the sixteenth century, and was, like "nearly all the Spanish poets of any eminence," a soldier. He fought beneath his father's banner, surviving his parent, but ultimately dying on the field of battle.

Preliminary to the poetical version of these stanzas, Prof. Longfellow has given an extremely well written introductory essay "on the moral and devotional poetry of Spain." We shall interest our readers in the whole essay we are persuaded, by the following extract from its close:

The most prevailing characteristics of Spanish devotional poetry are warmth of imagination, and depth and sincerity of feeling. The conception is always striking and original, and when not degraded by dogmas, and the poor, puerile conceits arising from them, beautiful and sublime. This results from the frame and temperament of the mind, and is a general characteristic of the Spanish poets, not only in this department of songs, but in all the others. The very error of imagination, which, exercised upon minor themes, leads them into extravagance and hyperbole, when left to act in a higher and wider sphere, conducts them nearer and nearer to perfection. When imagination spreads its wings in the bright regions of devotional song,—in the pure empyrean,—judgment should direct its course, but there is no danger of its soaring too high. The heavenly land still lies beyond its utmost flight.—There are heights it cannot reach; there are fields of air, which tire its wing; there is a splendor which dazzles its vision;—for there is a glory, which eye hath not seen, nor ear heard, nor hath it entered into the heart of man to conceive.

But perhaps the greatest charm of the devotional poets of Spain is their sincerity. Most of them were ecclesiastics,—men who had in sober truth renounced the realities of this life, for hopes and promises of another. We are not to suppose that all who take holy orders are saints; but we should be still farther from believing that all are hypocrites. It would be even more absurd to suppose, that none are sincere in their professions, than that all are. Besides, with whatever feelings a man may enter the monastic life, there is something in its discipline and privations, which has a tendency to wean the mind from earth,—and to fix it upon Heaven. Doubtless many have seemingly renounced the world from motives of worldly aggrandizement; and others have renounced it, because it has renounced them. The former have carried with them to the cloister their earthly ambition, and the latter their dark misanthropy; and though many have daily kissed the cross, and yet grown hoary in iniquity, and shrived their souls that they might sin more gaily on,—yet solitude works miracles in the heart, and many who enter the cloister from worldly motives, find it a school wherein the soul may be trained to more holy purposes and desires. There is not half the corruption and hypocrisy within the convent's walls, that the church bears the shame of hiding in its bosom. Hermits may be holy men, though knaves have sometimes been hermits. Were they all hypocrites, who of old for their souls' sake exposed their naked bodies to the burning sun of Syria? Were they, who wandered houseless in the solitudes of Engaddi? Were they, who dwelt beneath the palm-trees by the Red Sea?—Oh, no! They were ignorant,—they were deluded,—they were fanatic,—but they were not hypocrites,—if they be any sincerity in human professions and human actions,—that were not hypocrites. During the middle ages, there was cor-

ruption in the church,—foul, shameful corruption; and now also hypocrisy may scourge itself in feigned repentance, and ambition hide its face beneath a hood; yet all is not therefore rottenness that wears a scowl! Many a pure spirit, through heavenly-mindedness, and an ardent, though mistaken zeal, has fled from the temptations of the world to seek in solitude and self-communion, a closer walk with God. And not in vain. They have found the peace they sought. They have felt, indeed, what many profess to feel, but do not feel,—that they are strangers and sojourners here, travellers who are bound for their home in a far country. It is this feeling, which we speak of as giving a peculiar charm to the devotional poetry of Spain. We compare its spirit with the spirit which its authors have exhibited in their lives. They speak of having given up the world, and it is no poetical hyperbole;—they speak of longing to be free from the weakness of the flesh, that they may commence their conversation in Heaven, and we feel that they had already begun it in lives of penitence, meditation and prayer.

In the 29th and 30th stanzas, we find the original of the fine verses we had seen applied, without knowing whence they came, to our own Washington, beginning thus:—

His was Octavian's prosperous star,
The rash of Cæsar's conquering car,
At battle's call; &c. &c.

We coincide entirely with Prof. Longfellow in the high estimation he expresses of this poem of Manrique's. Our readers will be led perhaps by the quotation below to concur with us in the opinion that what is admirable in the Spanish, is beautifully rendered into English:

XXI.
Tu que por nuestra maldad,
Tomaste forma civil
Y baxo nombre,
Tu que a tu Divinidad
Juntaste cosa tan vil
Como el hombre,
Tu que tan grandes tormentos
Sufriste sin resistencia
En tu persona,
No por más merecimientos,
Mas por tu suma clemencia
Me perdona.

XLII.
Así con tal entender
Todos sentidos humanos
Conservados,
Cercado de su muger,
Y de sus hijos y hermanos
Y criados;
Dio el alma a quien se la dió,
El qual la ponga en el cielo
Y en su gloria:
Y aunque la vida murió,
Nos dexo harto consuelo
Su memoria.

We must say a word in commendation of the beauty of the paper and typography of this little volume.

POEMS BY THE HON. MRS. NORTON. Boston, ALLEN & TICKNOR.—Our columns have been too often graced by occasional poems from the pen of this lady, to render it necessary for us to say more now, than that in the collection of Poems here presented to us, we find the same grace, feeling, point, and polish, which distinguish her muse. We select one short piece, which may be admired for the truth of the moral it conveys, as much as for its poetical beauty.

THE CARELESS WORD.

A word is ringing thro' my brain,
It was not meant to give me pain;
It had no tone to bid it stay,
When other things had past away;
It had no meaning more than all
Which in an idle hour fall:
It was when first the sound I heard
A lightly uttered, careless word.

That word—oh! it doth haunt me now,
In scenes of joy, in scenes of woe;
By night, by day, in sun or shade,
With the half smile that gently played
Reproachfully, and gave the sound
Eternal power thro' life to wound.
There is no voice I ever heard,
So deeply fix'd as that one word.

When in the laughing crowd some tone,
Like those whose joyous sound is gone,
Strikes on my ear, I shrink—for then
The careless word comes back again.
When all alone I sit and gaze
Upon the cheerful home fire blaze,
Lo! freshly as when first 'twas heard,
Returns that lightly uttered word.

When dreams bring back the days of old,
With all that wishes could not hold;
And from my feverish couch I start
To press a shadow to my heart—
Amid its beating echoes, clear
That little word I seem to hear:

XXI.
"O Thou, that for our sins didst
take
A human form, and humbly
Thy home on earth; [make
Thou, that to thy divinity
A human nature didst ally
By mortal birth,— [here,
And in that form didst suffer
Torment, and agony, and fear,
So patiently:
By thy redeeming grace alone,
And not for merits of my own,
O pardon me!"

XLII.
As thus the dying warrior
prayed,
Without one gathering mist or
Upon his mind, [shade
Encircled by his family, [eye
Watched by affection's gentle
So soft and kind, [rose;—
His soul to Him, who gave it,
God lead it to its long repose,
Its glorious rest! [has set
And though the warrior's sun
Its light shall linger round us
Bright, radiant, blest. [yet,

In vain I say, while it is heard,
Why weep?—'twas but a foolish word.
It comes—and with it come the tears,
The hopes, the joys of former years;
Forgotten smiles, forgotten looks,
Thick as dead leaves on autumn brooks,
And all as joyless, though they were
The brightest things life's spring could share.
Oh! would to God I ne'er had heard
That lightly uttered, careless word!
It was the first, the only one
Of those which live for ever gone
Breathed in their love—which had for me
Rebuke of harshness at my glee:
And if those lips were here to say,
"Beloved, let it pass away."
Ah! then, perchance—but I have heard
The last dear tone—the careless word!
Oh! ye who, meeting, sigh to part,
Whose words are treasures to some heart,
Deal gently, ere the dark days come,
When earth hath but for one a home;
Lest, musing o'er the past, like me,
They feel their hearts wrung bitterly,
And, heeding not what else they heard,
Dwell weeping on a careless word.

LETTERS OF HORACE WALPOLE TO SIR HORACE MANN, British Envoy at the Court of Tuscany; edited by LORD DOVER, 2 vols. New York, G. DEARBORN.

—Great is the obligation that the lovers of that most captivating species of literature—which carries us as it were behind the scenes of the great tragi-comedy of life,—are under to Mr. Dearborn for the beautiful edition here presented to them of one of the most entertaining, and we may surely add, instructive works of this sort. We have through the English periodicals been enabled heretofore to lay before our readers such extracts from these letters as, while they will dispense us from the necessity of commenting upon the work now, will have had the effect, we are persuaded, of rendering them most anxious to possess the whole book. They will not regret its cost, either in time or money.

THE REPEALERS, A NOVEL; BY LADY BLESSINGTON.

2 vols. Philadelphia: CAREY, LEA & BLANCHARD.—Our readers know Lady Blessington by her spirited sketches of, and conversations with, Lord Byron. This novel introduces her as a more elaborate writer. It is a fiction by an Irish lady, intended to promote, what so many here in this country are laboring to prejudice, the sense of reciprocal advantage derived both to England and Ireland from the Union. Lady Blessington, in her conversations, and sketches of the Irish, both in high and low life, seems not less spirited and successful, than in those above referred to, of Lord Byron; and upon the whole, this work must redound to her reputation as a writer.

THE INVISIBLE GENTLEMAN, A NOVEL; BY THE AUTHOR OF 'CHARTLEY THE FATALIST.' 2 vols. Philadelphia, E. L. CAREY & A. HART.—This novel depends for its interest on the faculty imparted to its chief character, of rendering himself invisible at pleasure by pulling his left ear! The dilemmas and scrapes into which the indulgence of this power lead him, and the occasionally ludicrous scenes which his sudden disappearance gives rise to, constitute the interest of the story. There is considerable skill evinced in delineating and individualizing characters, and in the general conduct of the story; and the moral, so far as the development of the plot goes to prove that happiness and reputation are not to be attained by any course at variance with the ordinary and established laws of nature,—is good.

HISTORY OF SPAIN AND PORTUGAL, Vol. V.—forming vol. 23 of Lardner's Cabinet Cyclopaedia. Philadelphia: CAREY, LEA & BLANCHARD.—This volume closes the history of the Peninsula, bringing down the narrative to the commencement of the French revolution. The motives for stopping at such an eventful period are stated to be, that the author had already exceeded his relative proportion for the historic part of such a collection as the Cabinet Cyclopaedia; and moreover, that there were so many narratives of high authority of the important occurrences since that period in Spain, that he felt it the less necessary to prolong his work. Such as it is, we do not doubt this will become a very popular history.

MEMORANDA OF A RESIDENCE AT THE COURT OF LONDON, BY RICHARD RUSH. Philadelphia: KEY & BIDDLE.—This is a second edition of an agreeable and honest work—written in the spirit of truth and fairness. The beauty of this edition is remarkable. We have rarely seen from any press a better executed book.

VOYAGES ON THE COAST OF AFRICA; BY CAPT. OWEN, R. N. 2 vols. Harpers.—These volumes embody a large amount of important information, and address themselves alike to the navigator and the man of science. They detail the particulars and results of a voyage undertaken by command of the British Board of Admiralty, in order to obtain accurate surveys of the Eastern Coast of Africa, and that of the Island of Madagascar. The two voyages occupied nearly four years, and the discoveries effected during them, relate to all the rivers, harbors, &c. along the immense regions traversed by Capt. Owen.

The work is very handsomely printed.

DRAMATIC SCENES FROM REAL LIFE, BY LADY MORGAN. 2 vols. Harpers.—It is pretty tough work for us with Lady Morgan. She has her admirers—warm ones and not a few—but though the persecution of the British Quarterly is a strong recommendation in her favor, still there are books which we would rather read than hers. In the first place, they are written in so many languages, that one is in danger of forgetting his own vernacular while tugging through the jargon of French, Spanish and Italian, with which she tesselates her English-Irish pages. And then, after you do slip and stumble through this stupendous polyglott conglomeration of phrases, you are half the time in the condition of a sportsman, who, after floundering over a dozen acres of rocks and brambles to get in the heart of a close cover, finds not a bird to reward him for his pains. We sicken too of Lady Morgan's "high life" affectations, and the absurd buffoonery she tries with such a strange want of tact to dignify into "elegant trifling." Nature made her a woman of vivid imagination, strong feelings, and unquestioned talents; and had she been born in the sphere whose tone she affects with such pertinacious vulgarity, or had her husband never exchanged his pestle and mortar for a coat of arms, and made her a knight's lady, she might, instead of wasting an excellent mind in trashy productions like that before us, have ranked next to Miss Edgeworth, as one of the first female writers of our century. Even in these volumes, which have more than the usual leaven of second hand pretension and egotism about them—that sort of impertinence which English tourists pass off upon our countrymen for *ten*—there are some bold and vigorous touches of character, which almost redeem every thing else. The characters of Mrs. Quigley and Mr. Galbraith, in the first sketch, are very well managed; and although we were nearly driven out of the volume by "an exceedingly fashionable footman, armed with an elegant horsewhip," we tolerated the coxcomb for the sake of an original and admirably drawn character of an Irish Priest, that soon after comes upon the scene. The entrance of this personage gives rise to some reflections upon the condition of Ireland, which would be worthy of a work of graver pretensions than that where they are found; and indeed if the reader is sufficiently inured to the polite jargon of what is called the English fashionable novel to overlook the absurd fillagree work with which Lady Morgan has interwoven "the tissue of her story," he may find, with many eloquent passages, a valuable residuum of information, so far as Irish society in all its phases is concerned, in the chief of these "Dramatic Sketches."

THE HISTORY OF CHARLEMAGNE; BY G. F. R. JAMES, Esq. author of the 'History of Chivalry,' &c. The well-known author of 'Richelieu' and 'Philip Au-

gustus,' was the man of all others to undertake a history of this kind. The antiquarian knowledge and research by which Mr. James is distinguished, united to his acute perception of character, and highly poetical cast of mind, qualify him especially for writing the biography of the great hero of the feudal ages; and he has consequently produced one of the most interesting, if not the most valuable works, which the Harpers have incorporated with their Family Library. We shall speak more particularly of this work hereafter.

MARTIN FABER, the Story of a Criminal, 1 volume 18mo., Harpers.—An original American work of fancy is not so common among the light productions that weekly load our table, but that we read it with an interest which the re-publication of foreign books can hardly call forth. Martin Faber we have perused with close attention, and we do not hesitate to say, that since Godwin carried that singular and impressive style, first introduced in modern fiction by our countryman Charles Brockden Brown, to such perfection in Caleb Williams, no work of that school has come under our notice which shows more power than the little tale before us. The story is so brief that it is difficult to make an extract without giving an unfair insight into the whole book; but there is one scene so strongly wrought up in the best style of the authors with whom we have compared the author of Martin Faber, that we cannot withhold it from our readers.

The incidents are brought on by a parting interview, on the eve of his marriage with another, between the hero of the story and a girl whom he has ruined.—The wretched victim of his remorseless passions clings around her destroyer and beseeches him, with all the tenderness of a doting woman, to fulfil his vows and snatch her name, ere it be too late, from scorn and ignominy:

I stood even this appeal. My heart was steeled within me, and though I spoke to her less harshly, I spoke as hypocritically as ever. She saw through the thin veil which I had deemed it necessary to throw over my dishonesty, and a new expression took the place of tenderness in her features.

"It is all true then, as they have said," she exclaimed passionately. "Now, O God, do I feel my infirmity—now do I know my sin. And this is the creature I have loved—this is the thing—wanting in the heart to feel, and mean enough in soul to utter a falsehood and prevaricate—this is the creature for whom I have sacrificed my heart—for whom I have given up, hopelessly and haplessly, my own soul.—Oh, wretched fool—oh, miserable, most miserable folly. Yet think not," and as she turned upon me, she looked like the Priestess upon the tripod, influenced with inspiration—"Think not, mean traitor, as thou art—think not to triumph in thy farther seduction. Me thou hast destroyed,—I am thy victim, and I feel the doom already. But thou shalt go no farther in thy way. I will seek out this lady, for whose more attractive person, mine and my honor and affections, alike, are to be sacrificed. She shall hear from me all the truth. She shall know whether it be compatible with her honor and happiness, or the dignity of her character, to unite herself, in such bonds with a man who has proved so deadly, so dishonorable to her sex. And, oh, God!"—she exclaimed, sinking fervently on her knee—"if it shall so happen that I save one such as I, from such a folly as mine, may it not expiate in thy sight, some portion of the sad offence of which I have been guilty."

She rose firmly and without a tear. Her eyes were red, her cheeks were burning with the fever of her whole frame, and she seemed, in all respects, the embodiment of a divine, a glorious inspiration. I was awed—I was alarmed. I had never before seen her exhibit any thing like daring or firmness of purpose. She was now the striking personification of both. She approached and sought to pass by me. I seized her hand. She withdrew it quickly and indignantly.

"Begone" she exclaimed—"I scorn, I despise you. Think not to keep me back. You have brought death and shame among my people in devoting me to both. You shall pollute me no more. Nay, speak not. No more falsehood, no more falsehood,

for your own soul's sake. I would not that you should seem meaner in my sight, than you already are."

I seized her hand, and retained it by a fierce grasp.—

"Emily," I exclaimed, "what would you do—why is this? I ask but for delay, give me but a month, and all will be well—you shall then have what you ask—you shall then be satisfied."

"False—false! These assurances, sir, deceive me not—they deceive me no more. My hope is gone, forever gone, that you will do me justice. I see through your hypocrisy—I know all your villainy, and Constance Claiborne shall know it too. Ha! do you start when her name is but mentioned. Think you, I know it not all—know I not that you have been bought with money—that, vile and mercenary as you are, you have not only sold me, and this unborn pledge of your dishonesty and my dishonor, but you have sold yourself. Seek not to keep me back. She shall hear it all from these lips, that thenceforward shall forever more be silent."

She struggled to free herself from my grasp, and endeavored to pass by me with a desperate effort—her strength was opposed to mine, and in the heat of the struggle I forgot that victory in such a contest would be the heaviest shame. Yet, I only sought, at first, to arrest her progress. As I live, I had then no other object beyond. I did not intend violence, far less further crime. But the fate was upon me;—she persisted in her design, and in the effort to prevent her passage, I hurled her to the ground. I paused, in a deadly stupor, after this. I was no longer a reasoning—a conscious being. She looked up to me imploringly—the desperate feeling which had heretofore nerved and strengthened her, seemed utterly to have departed. The tears were in her eyes, and, at that moment, she would have obeyed as I commanded—she would have yielded to all my requisitions—she would have been my slave. She met no answering gentleness in my eyes, and with a choking and vain effort at speech, she turned her face despairingly upon the still dewy grass, and sobbed, as if the strings of the heart were breaking in unison with each convulsion of her breast. At that moment, I know not what demon possessed me. There was a dead a more than customary silence in all things around me. I felt a fury within me—a clamorous anxiety about my heart—a knowing something that would not sleep, and could not be silent; and, without a thought of what I was to do, or what had been done, I knelt down beside her. My eyes wandered wildly around the forest, but at length, invariably, settled, in the end, upon her. There was an instinct in all this. She had the look of an enemy to the secret and impelling nature within me, and, without uttering a single word, my fingers, with an infernal gripe were upon her throat. She could not now doubt the desperate character of my design, yet did she not struggle—but her eyes, they spoke, and such a language! A chain which I myself had thrown about her neck—that neck all symmetry and whiteness—was in my way. I sought, but vainly, to tear it apart with my hands, and could only do so—with my teeth. In stooping to do this, she writhed her head round and lifted her lips to mine. I shrunk, as from the fang of a serpent. They had a worse sting, at that moment, in my eyes. Mournfully, as she saw this, she implored my mercy.—

"Spare, forgive, dearest Martin, I will never vex you again—spare me this time, and I will be silent. Kill me not—kill me not!"—more wildly she exclaimed as my grasp became more painful—"I am too young to die—I am too bad to perish in my sins. Spare me—spare me. I will not accuse you—I—God! Oh, God!"—and she was dead—dead beneath my hands!

This is certainly finely dramatic. The painter of such a scene has literary talents of no common order. There is another passage which, as forming an admirable sequel to this, we must here add:

I have already said, the bride was beautiful. Words cannot convey an idea of her beauty. She was emphatically a thing of light and love—

"Which seen, becomes a part of sight"

In grace, one knew not with what, save herself, to institute a comparison. In expression, there were volumes of romantic, and interesting poetry, embodied in each feature of her face; and the steel of my affections, stern as it was, wherever she turned, even as the dutiful needle to the pole, turned intuitively along with her. Such was the maiden,—so much after the make and mould of heaven, when a cruel destiny was about to link with one formed in spirit after the fashion of hell.

The ceremony was begun. We stood up with linked hands at the altar. The priest went on with his formula. The bride's hand trembled in mine, and her eyes were commencing only with the richly carpeted floor. I was about to answer the question which should have made us one, when a cold wind seemed to encircle my body. My bones were numbed, and a freezing chill went through my whole system. My tongue refused its office, and, instinctively, as it were, bending to the opposite quarter of the apartment, my eyes fell upon a guest whom none had invited. There, palpable as when I had last seen her, stood the form of Emily Andrews. A pale and melancholy picture, and full of terrible reproach. I was dumb, and for a moment, had eyes only for her. She was motionless, as when I had borne her to the unhallowed grave in which she did not rest. I felt that all eyes were upon me—the bride's hand was slowly withdrawn from mine, and that motion restored me. Mine were terrible energies. I seized her hand with a strong effort, and with a voice of the sternest emphasis, my eye firmly fixed upon the obtrusive phantom, I gave the required affirmative. With the word, the figure was gone.—I had conquered. You will tell me, as philosophers have long since told us, that this was all the work of imagination—a diseased and excited fancy, and in this you are probably right. But what of that? Is it less a matter of supernatural contrivance, that one's own spirit should be made to conjure up the spectres which haunt and harrow it, than that the dead should actually be made to embody themselves, as in life, for the same Providence? The warning sound that chatters in my ear of approaching death may be, in fact, unuttered; but if my spirit, by an overruling fate, is calculated for the inception of such a sound, shall we hold it as less the work of a superior agency? Is it less an omen for that?

This was not all. At midnight, as I approached my chamber, the same ghastly spectre stood at the door as if to guard it against my entrance. For a moment I paused and faltered; but thought came to my relief. I knew that the energies of soul, immortal and from the highest as they are, were paramount, and I advanced. I stretched forth my hand to the key, and all was vacancy again before me. If my fancies conceived the ghost, my own energies were adequate to its control. In this I had achieved a new conquest, and my pride was proportionately increased and strengthened. I was thus-taught how much was in my own power, in making even destiny subservient to my will!

With these specimens of the work, which speak for themselves, we have nothing further to add of the unpretending but admirable little story of Martin Faber, except that the moral of the tale, which impresses the necessity of proper and early education, is excellent. How just are the author's ideas of education, his own book tells us in these words:

When the author speaks of education he does not so much refer to that received at the school and the academy. He would be understood to indicate that which the young acquire at home under the parental eye—in the domestic circle—at the family fireside, from those, who, by nature, are best calculated to lay the guiding end the governing principles. It is not at the university that the affections and the moral faculties are to be tutored. The heart, and—*les petites manières*—the manners, have quite another school and other teachers, all of which are but too little considered by the guardians of the young. These are—the father and the mother and the friends—the play-mates and the play-places.

We may seem to have already bestowed too much space upon a book that purports to be meant only "for the use of children;" but a writer of such approved discernment, as is evinced in the passage last quoted, must well know the ill effects of letting one's own powers lie idle; and will therefore enter into our views, when we express our unfeigned wish to hear soon again from the author of Martin Faber.

TALES OF THE CARAVANSARAI: by the Author of the "Kuzzilbash," 1 vol. Harpers.—Every novel-reader remembers the *Kuzzilbash*. It was one of the best works illustrative of men and manners in the East, since Hope's *Anastanius*, but more full of striking incidents than even that most interesting book. The present work of Mr. Fraser will, we think, sustain his reputation as one of the most successful and popular writers of the day. The mate-

rials are of the same description as the *Kuzzilbash*, and they are wrought up with the same talent which characterized that animated picture of wild encounters, and barbaric pageants, in half savage lands; changing as it did from the gardens of the harem, or the chambers of the *underoon* itself, to the sand-hills of the Desert, and the tents of its wandering inhabitants.

—The present volume, entitled the *Khan's Story*, is but the first of a series which may be expected from Mr. Fraser, under the general title of *Tales of the Caravansarai*—the plan of the work being to bring a number of oriental characters together in one of these Asiatic hostleries in the midst of the Desert; and after shutting them up with a snow-storm which renders the roads, if they may be so called, impassable for some weeks, to set each one present relating a story after the true Eastern fashion of beguiling time. The conception is a good one, and unless it be Mr. Morier, the ingenious author of *Hajji Baba*, we know of no living writer more capable of making it a most valuable medium for conveying just views of Eastern life and story, than he who has here undertaken it.

SUMMARY.

JAMES FENNIMORE COOPER, who, with his family, intended to embark in the *Erie*, finding the accommodations pre-engaged, went over to England, and will probably reach here by the next Liverpool or London packet.

THE ST. LOUIS.—Extract of a letter from Natchez, dated the 10th inst.—"The *St. Louis Story*, has arrived after a quick and excellent passage. She was towed up by the steamboat *Whale*, from New Orleans, and was only 48 hours coming up, a distance of 300 miles. She was received here yesterday afternoon amidst the shouts and acclamations of the citizens.—The *St. Louis* commenced discharging this morning."

We learn from the *Galenian*, that all the difficulties with the neighboring savage tribes are at an end. The *Winnebagoes* have crossed the *Wisconsin River*, and the vanquished *Sacs* and *Foxes* appear quite humble and disposed for peace. A treaty is to be held about the 10th instant, with the *Potawatomes*, a tribe of Indians inhabiting the borders of *Lake Michigan*, when it is expected that all the Indian title to the lands between the *Mississippi river* and the *Lake* will be purchased by government.

Gold in New England.—It appears by an article in *Silliman's Journal*, that Gold has been found in the southern part of the state of Vermont. The gold of the southern states and of Mexico is found in talcose rocks, and it was thought it would also be found in rocks of the same description in New England.

The search thus far has been successful. The *Boston Globe* states that gold was found dispersed over several hundred acres of this soil; about three penny weights of fine gold was obtained from a bushel of dirt collected in different places.

The *U. S. Gazette* fills out a column with the following distich, in which there is truth, if not poetry:

"There is nothing in life so shocking
As a fine girl with a hole in her stocking"

Bears.—It is scarcely in the recollection of the oldest inhabitants that so large a number of these animals have been killed and seen in this District. Probably not less than 30 to 40 have been sold in our markets in the last month and as many more killed. Two or three persons have had narrow escapes in encounters with them, and about two weeks ago a person was said to have been devoured by them. The following account as regards the parish of *St. Joachim*, 25 miles below *Quebec*, is furnished on good authority:—"A gentleman from *St. Joachim* mentions that no less than twelve Bears have been killed in that Parish within the last thirty days. These animals were were uncommonly lean and voracious. Most of them were destroyed by fire arms or taken in snares. In one instance however, he states that a large bear came boldly upon a man who was working in a field with a scythe—a struggle took place and the man was badly wounded in the hand and would probably have perished had not his brother come to his assistance, who contrived to trip up and finally to despatch the Bear with a scythe. The animal did not relinquish his grasp of his in-

tended victim until he was completely exhausted by the loss of blood.—[*Quebec Gaz.*]

A letter from *Charleston* states, that owing to the recent high tides, which broke the banks, the rice planters on *Cooper River*, after their rice had been stacked had great part of their crop washed away.

[From the *Baltimore Patriot* of Wednesday, P. M.]

We learn that *McCLINTOCK YOUNG*, Esq. of *Baltimore*, has been appointed Chief Clerk of the *Treasury Department*—and current rumor assigns the office of *Navy Agent* for this port to *Col. JOHN THOMAS*.

THE D—L AMONG THE TAILORS.—The following notification from the *Virginia Penitentiary* has caused great uproar among the tailors in *Richmond*. The other crafts have also taken up the subject, and a public meeting was called to consider of what steps it was expedient to take.

Tailoring in the Penitentiary.—The above branch of labor, for some years past restricted to demands of the Commonwealth, was by act of the last Legislature, placed on a footing with other mechanics in the institution, and is now open to individual orders, which will be executed neatly, faithfully, and with despatch, at the following prices:

Making a cloth frock or close coat,	\$3 50
Do. domestic do.	2 to 2 50
Do. cloth or cassimere pantaloons,	1 25
Do. domestic do.	1 00
Do. vests, rolling collar or double breast,	1 50
Do. do, plain,	1 00

We do not wonder at the excitement upon this subject; for we cannot but think it an unjust interference with honest labor, that rogues and felons who are kept by the State, should be permitted to undermine its fair profits. The result of such a scheme is to make the whole expense of reforming and punishing criminals fall upon those mechanics whose branches of business are pursued in *Prisons* and *Penitentiaries*. If trades must be given to rogues, let it not be at the expense of honest men; and above all let not that be called economy, which ruins the upright and industrious mechanic in order that it may be proved that criminals in prison can be made to pay their own expenses. It would be both cheaper and juster, to levy a general tax for the support of prisons, and to employ the labor of its inmates in destroying one day what it created the day before, rather than to undersell, as is now done, the produce of honest labor.

RIGHTS OF THE PRESS.—An argument of several days has been held before the Mayor of *Philadelphia*, on a motion in a criminal proceeding that the reporters be prohibited from publishing the testimony pending the trial. The Mayor decided, with entire reason as it seems to us, against the prohibition.

Indian Affairs.—The annexed article of intelligence respecting the remains of the *Six Nations*, yet residing in the western part of this State, is from the *Buffalo Patriot* of Tuesday. It will be seen that we have now two "*Regencies*" in this State—that of *Albany*, and that of the *Senecas*:

"At the Grand Council of the Chiefs and Warriors of the *Six Nations*, now in session near this city, a grandson of the celebrated Indian Chief *Red Jacket*, two years old, has been elected Chief. This has been done in honor to the memory of that distinguished Chief. A *Regent* has also been appointed to act for him during his minority.

"The Council have not, as yet, decided on the important proposition submitted to the *Indians*, relative to the purchasing of their lands in this State, and their removal to *Green Bay*; but it is evident, judging from the angry discussion and division among them, that they will not accede to the wishes of the government, nor will they even send a delegate to the west.

Yesterday, a grand Ball match was played by the *Seneca*, *Allegany*, *Cattaraugus* tribes, against the *Oneida*, *Tonawanda*, and *Onondagas*, for about \$400 in goods and money, which resulted in favor of the *Senecas*. We understand that another trial of their skill will be had this afternoon, on a large plain one mile above *Sackett's Tavern*.

It is no very novel thing to see fruit trees blossom a second time in one year, but a second crop of fruit from the same tree in one season, is a novelty which the garden of *Mr. W. Bowen*, in *Buckshuten*, *West Jersey County*, can alone exhibit. And what is

most surprising, the apples are as large as those of the early season.—[Philad. Chron.]

Agricultural Thrift.—Gen. James Shelby, of this county, sold a few days since, a flock of 160 mules, raised on his plantation, for the sum of \$11,840 cash in hand. Fourteen of these mules were purchased by the agent of a gentleman of Cuba, and were sold for \$130 each, making an aggregate \$1,820 for the 14.—[Lexington (Ky.) Intell. of 24th ult.]

Orders have been issued at the Quebec Custom House, that the Dollar is hereafter to be received at 4s. 4d. sterling, instead of 4s. 6d.

Several mercantile houses, says the Daily Advertiser, have failed at Quebec, and the claims against them will amount to between 60 and £70,000. There has also been a failure at Montreal and another at Kingston, which has had the effect of creating a want of confidence in that community.

The extensive furnace of Gosfield, in Upper Canada, has been totally consumed by fire. The melting ore was discharged upward, fell upon the roof and set fire to the building.

Good.—It is said that an actor who has recently arrived in this country with the intention of travelling, in addition to his professional occupation, finding that the proceeds of his book would be convenient for expenses, wrote the history of his journeys and the result of his observations beforehand, and took the money from the publisher for the copy-right.—[Jour. of Com.]

[From the Baltimore Chronicle.]

Journal of Mr. Durant's Aerial Voyage.—The Balloon was unmoored at 5 hours 27 minutes, the barometer standing at 29.42, and the thermometer 80. In a short time let go the Rabbit, and saw it land safely. At 5 h. 35 was over a road, and thought of descending, but kept on. At 5 h. 46 was within hailing distance of the earth, and conversed with several men; understood them to say the distance to Baltimore was 4 miles; understood their names to be Thomas and Philip Burgan. At 5 h. 50 was within hailing distance again, and conversed with several persons—understood them to say, Baltimore was distant 7 miles. On inquiring the name of the first town, in the direction I was going, understood them to say Abington, and afterwards Bel Air. At 5 h. 55, saw the Sun set and heard report of 2 guns; judged the sound came from W. by N.—About 3 minutes previous to which, tried an experiment for a gentleman in this city, which, if it proves successful, will be given to the world. At 6 h. 8, barom. 28.02, therm. 72, I was suspended over Gunpowder River. At 6 h. 9, conversed with an inhabitant, understood his name to be Mr. Carroll, and the name of place Perry Hall—understood the name of another gentleman to be Isaac Holland, who was very communicative; he informed me I was 13 miles from Baltimore, and the next town was Bel Air—and desired I would not forget his name. At 6 h. 16, again conversed; understood Bel Air was distant 5 miles. Felt anxious to see the town having heard a good account of it before starting, by persons who told me I should go in that direction. At 6 h. 32, barom. stood at 24.43, therm. 62. At 6 h. 53, both anchors grappled with the earth about 200 feet from the Court House in Bel Air. About 200 persons immediately ran up, and politely proffered help, evincing a great desire to assist me. I remained suspended about one hundred feet, until towed by them to a clear field in the middle of the town; at 6 h. 44, the car touched the earth. At 6 h. 53, I stepped from the car. At 7 h. 12, every thing was secured—packed up and taken to Mr. Richardson's Hotel, where I was politely received and entertained. Among the gentlemen who assisted me to alight were Benjamin Bond, Henry Richardson, Major W. Richardson, Doctor Augustus Bond, Doctor Munikhuyzen, Colonel H. Dorsey, Colonel I. D. Maulsby, Joseph Robinson, Major Bradford, Mr. Dimmitt and Ralph S. Lee. The persons over whose farms I had passed, also came up with alacrity. I must not omit to mention the attention of the ladies in taking charge of my barometer, &c. Tea was soon prepared, and I partook heartily, having tasted nothing since half past seven o'clock, A. M. The tea table was graced with the presence of a large number of ladies, and my satisfaction was heightened by the presence and attention of the Rev. R. H. Davis, and Mr. Charbonnier. After tea, we called on Colonel H. Dorsey, where a bottle of very superior old wine was produced, he having promised it to his friends in case the balloon should descend in the village. In the morning, I breakfasted by invitation with Mr. Robinson, Postmaster. I was here waited on by Mr. Kenny, deputized by the ladies of the lower part of the town, to

express their thanks for having selected their village as the place of descent. A number of ladies called, personally, and were each presented with a flower from the decoration of the car.

Left Bel Air 9 h. 20, and was escorted by a cavalcade of gentlemen to the county line; the cavalcade was composed of Col. Maulsby, Mr. Boulden, Mr. Elliott, Mr. McKenney, Mr. Furry, Mr. Jones, W. P. Maulsby, Mr. Davis, Dr. Bond, and Dr. Munikhuyzen. Arrived at Barnum's at half past 3 P. M. I should have mentioned that Mr. Richardson sent me to Baltimore in his gig, for which, as well as for my entertainment, he would receive no remuneration. In conclusion, I beg leave to present my thanks thus publicly to those gentlemen of the city who kindly afforded me their aid in the preparations for the ascent at the Garden, and especially to acknowledge with a sense of obligation the courtesy which has been extended to me by the citizens generally in all my preparations and arrangements. At Bel Air no less civility and kindness were afforded me on alighting there and in returning to the city. Nothing of personal attention has been wanting any where to make the ascent and the descent agreeable to my feelings. C. F. DURANT.

The following is the amount of the valuation of real and personal estate, as made up by the Board of Assessors, at their final meeting last evening. The amount of taxes to be raised for the present year, it is understood will exceed \$800,000, which, with the expenses of collection, &c. will not vary much from one half per cent. on this valuation. The total increase of the valuation of real and personal estate, since the last year's report, is \$23,018,461. The expenses incurred by the prevalence of the Cholera last year, which are to be included in this year's taxes, we understand, amounted to nearly \$300,000.—[Jour. and Adv.]

VALUATIONS.			
Wards.	Real Estate.	Personal.	Total.
1st	22,521,104	26,051,869	48,572,973
2d	10,514,509	2,864,735	13,379,245
3d	10,100,000	6,366,772	16,466,772
4th	6,851,559	2,565,553	9,417,109
5th	8,698,000	3,727,172	12,425,172
6th	5,675,559	2,885,776	8,561,336
7th	6,480,180	1,989,470	8,469,650
8th	6,899,686	1,406,400	8,306,086
9th	4,806,300	551,100	5,357,400
10th	6,230,800	636,500	6,867,300
11th	6,487,958	551,900	7,039,858
12th	7,432,325	498,900	7,931,225
13th	2,351,600	345,158	2,696,758
14th	4,453,600	1,988,605	6,442,205
15th	7,167,735	2,054,300	9,222,035
Total,	114,907,013	54,474,110	179,381,123

COAL TRADE.—We take from the Miner's Journal of Saturday, the following statement of the coal shipped from the mines the present season, up to the 20 inst.:

Little Schuylkill.....	25,718
West Branch Railroad.....	57,750
Mount Carbon Railroad.....	55,365
Mill Creek Railroad.....	32,764
Schuylkill Valley Railroad.....	19,423
Lehigh Coal Trade.....	78,900
Delaware & Hudson Coal Trade.....	64,950
Total, tons.....	330,980

[From the Boston Atlas.]

DR. JONATHAN WILD, says a correspondent, whose death at Walpole has recently been announced, was venerable for years and for services to his country. In the spring of 1775 he received from Drs. Gardiner Baker and Warren his license to practise as a physician and surgeon. On the morning of the 19th of April he was walking alone in Randolph, his native town, and considering where he should pitch his fortune. The noise of guns at Lexington, decided him. He marched on that day as a volunteer, and arrived at Cambridge about an hour after the British had passed on their retreat. From that time he did not return home until he came sick from Canada whither he proceeded in the Spring of 1776, as a gunner in Major Stevens' artillery. His return took place in December following. Afterwards he served as surgeon's-mate, on board the Continental frigate Warren, Commodore John Hopkins; then as surgeon on board the privateer Speedwell, Captain Daniel, and, lastly, in the same capacity on board the Continental sloop of war Revenge, under the gallant and enterprising Captain Augustus Cunningham.

Dr. Wild was a pensioner of the United States, during the last seventeen years of his life. His pension had lately increased, but he lived but a little while to enjoy it. He was eighty years old. For forty to fifty years he was an active practitioner of medicine.

Dr. Wild related to the writer sometime ago an anecdote of Washington of which he was a witness. "On one night in December 1775, a party of 500 men was sent to fortify on Barrell's Hill, where the

Insane Hospital now stands. It was very cold and Washington was there looking at the work. A man named Wilder of Plymouth, mistaking Washington for a soldier, came up behind him and putting his hands upon his shoulders shook him stoutly, saying, 'man alive, if you don't take a tool and go to work, you'll freeze to death.' The man was alarmed when he discovered his mistake, but Washington smiled so pleasantly that he was immediately relieved from his apprehensions.

The Rice Crops, which we noticed a few days since, as being very luxuriant, have been somewhat injured within the last week, the high tides which prevail having broken through the embankments, and overflowed the fields in many places. The fields on Cooper River, which is said to have been the most promising, suffered most from these inundations.—[Charleston Courier.]

[From the Alexandria Phenix of Tuesday.]

STEAMBOAT BURN.—The Steamboat Ousatic, plying between this place and the different landings on the Potomac River, was burnt to the water's edge, on Friday night last, whilst she was lying at Leonardtown, Md. The fire was entirely accidental, and so rapid was the progress of the flames, that the Captain and crew, asleep on board at the time, with difficulty escaped with their lives. We understand the Ousatic was partially insured. Another boat, it is said, will be put upon this route as soon as the necessary arrangements can be made.

It is computed that there are in the United States about 800 whale ships, employing about 10,000 men, and which bring home every 40 months, about 227,960 barrels of oil, the value of which is not far from \$4,000,000. The outfit of each ship, for 30 months' cruise, is from 15,000 to 20,000 dollars.

Health of New Orleans.—We are pleased to notice a manifest decrease of the number of interments for the last three days, and to understand that the number of cases of sickness has become less. We advise strangers, notwithstanding, not to hasten their return yet. As it is our intention weekly to notice the sanitary state of our city, they will readily perceive from our columns, when they can return with perfect security, and without risk.

Interments in the Catholic and Protestant Cemeteries.

	Catholics.	Protestants.
Sept. 13	23	12
" 14	21	7
" 15	14	15

[N. O. Bee of Sept. 16.]

There has been quite a decrease in the number of deaths within the last three days, but is owing more to the want of subjects, than any abatement in the disease. We have ascertained that there has been a few new cases of Cholera, but it does not appear to spread, and has been in almost every case produced by imprudence.—[N. O. Sept. 18.]

The death of the King of Spain is announced in a Lisbon letter of the 22d August, (some days later than before received,) published in the Boston papers of yesterday. The rumored battle between the forces of the contending brothers, was a rumor only.

LATEST FROM MEXICO.—Letters from Vera Cruz to Aug. 30th, state that the cholera was raging very badly among the poorer classes, and that the last accounts from the city of Mexico represented the disease as very destructive there also, among the same classes. Persons in comfortable circumstances were in both places comparatively exempt. Such has been the destruction among the soldiers, that both contending armies had been obliged to suspend all hostile movements. A letter from Mexico, dated August 27th, says that the deaths by cholera had already amounted to fourteen thousand, in a population of one hundred and eighty thousand. The disease was raging throughout the country.

FROM BRAZIL.—Capt. Green, of the brig Rebecca, from Para states that at the time of his sailing, that place was in a very unsettled state. A new President was hourly expected in a frigate from Rio, and it was expected that disturbances between the contending parties would take place at the exchange of Presidents. Preparations were making to fortify the city. The British sloop of war Race Horse, Capt. Cotton, sailed a few days previous on a short cruise; her commander had kindly offered to assist if necessary, all Americans residing at Para, in protecting them and their property. Produce of that country high and in demand. Dry salted Hides 150 reas per pound. Wet salted 100 do. Sugar 5 mill reas per arroba. American produce in abundance and sales dull owing to the unsettled state of the country.

We are indebted to the National Gazette for the following extracts from the introductory address delivered by Hon. Wm. Sullivan, before the American Institute of Instruction at Boston, 22d ult. Mr. Sullivan teaches practical truth in a clear and terse style, like a man of the world and a man of letters animated by a generous zeal for the welfare of all individuals. He answers in detail the important question—*"In what manner should an American youth be educated?"*

"The mere animal enjoyment of life, is far from being well understood in this country. This subject better deserves an appropriate treatise, than a short remark, which is all that this occasion allows. In this respect, we might be, with our abundant means far more intelligent and happy than we are. If those benevolent persons who give a portion of their time to teaching in Lyceums, would discourse on the common-sense practical philosophy of life, they would do far more good than they can do by discoursing ever so wisely on poetry, astronomy, rail roads and steam engines. How to eat, how to sleep, how to labour, what air to breathe, how to be dressed and how to be cleanly, concern every man, woman and child; for all these go to health, without which intellectual pleasures are of little worth.

"It is believed that there are lasting and painful infirmities, which begin in the school room. It is a convenience, and a relief, to a busy mother to send her children to school; for several hours in the day. She considers them safe while so employed; nor only so, they are getting learning, and preparing to get a living. But at this tender age, while the bones are hardening, and the delicate structure of the human frame is easily deranged, it is more than probable, that long continued sitting lays the foundation for diseases which show themselves in after life, and occasion affliction to the child, and cost and pain to parents. The learning that may be acquired, in these early years, can be no compensation for such evils. It would be far better, for parent and child, to have good schools for playing; as well as learning, during the early years of infancy. The natural athletic action of the human system, has no tendency to deform, or enfeeble it; while the tedious confinement of the school room is certain to do both. All that is contended for, is, that there should be a rational mixture of bodily action, and mental employment for children, as mutually auxiliary in preserving health, and in acquiring learning; and however common such thoughts may be, they cannot be too often expressed until they are carried into practical and general effect."

"Admit that all our schools, as they now exist, and all others which have been mentioned, if established, answered the purposes intended, they would only qualify young persons to commence the getting of a living, and to acquire property, as though the sole purpose of this life were to get, and to use, to keep, and die possessed of, such things as can be weighed, measured and counted, or valued by money. It is not perceived, that it makes any part of the course of education, to teach *how to live, or for what to live*. Is it wise or consistent with human capacity, to limit education to the mere purpose of getting this world's goods and to exclude all instruction as to the uses to which they should be applied and as to their true value in comparison with other attainments? It is not assumed that property is, in general, misused among us, nor intended that the honorable industry which is enriching this country should be laid aside or interrupted. No doubt this industry is conclusive proof of national welfare, as far as it goes. It is the source of the noble charities of which our citizens may be justly proud, since nearly all of these come from private donations, and not from the public chest. Passing by many cases, which might be mentioned, we may select, with pride and pleasure, the recent munificence of one of our citizens, in aiding to bestow a new sense on those whom nature seems to have neglected, and to restore a sense to those whom misfortune has bereaved. Such sensibility to the wants of others, sheds a glorious lustre on our land. It is not contended, that the manner in which property is acquired, or used, is wrong, but that the education which qualifies one for no more than to acquire property, merely for its own sake, is not that education which qualifies any human being to be intelligent and happy."

"It may be expected that when one ventures to assume that society is in error, and can become wiser, that he should point out the cause of error, and suggest the remedy. I have but light pretensions to the ability to do this. So far as I can see into this matter, it is from the general prevalence of unsound opinions as to worldly good; and from the habit into which the members of society have fallen, of making

comparisons between their own condition, and that of others. One, for example, has little satisfaction in a keen appetite, simple food, good clean raiment, a moderate and comfortable dwelling place, furnished for usefulness and not for show, and in safe and convenient means of transportation from place to place, nor even in good health, when he is obliged to compare himself with one who dwells in a splendid mansion, adorned with pictures and statues, and who dines at a table dazzling with porcelain, silver, and gold and on food which it has tortured ingenuity to prepare for him; and who rides on yielding springs seated on downy cushions. But the person who distresses himself in comparing his condition with that of his fortunate and luxurious neighbor, would be astonished to hear, that his neighbor is envying him for his supposed freedom from vexatious care, for his tranquil industry, and well earned health. It does not seem to be the possession of riches, nor every use, nor even the most common use of them, which constitute happiness."

"For, after the common wants of nature are satisfied, if the rich have no inclination to use money for charitable purposes or the public benefit, the pleasure of being rich must be derived from the consciousness of being thought, by the world, to be so.—The real value of wealth may be tested by comparing it with knowledge. Lord Bacon, or some other wise man, says that knowledge is power. Wealth cannot buy health but can easily lead, to disease. It cannot buy knowledge, good sense, taste, good manners, or good feelings; but may, and often does, prevent the acquisition of all of them. It cannot purchase self-satisfaction or tranquility, but often makes one dissatisfied and painfully anxious. It does not make one independent, but often makes one a miserable slave. If a miracle could be wrought in relation to a sensible, well informed man, and a rich one who values himself only on his riches, the true value of wealth would be discerned. Suppose two such men could remain precisely in their respective conditions, as to possessions and use of worldly things, but that the eyes and tongues of the world should become insensible as to both of them. The rich man's house would be seen, but he would not be known to be the possessor. His festivals would occur, but he would not be known to give them. His equipage would continue to glitter, but he would not be known to be the fortunate owner. He would come to the sad conclusion, that he spends his life for others, and does not live for himself. While the other man would still have his sources of satisfaction, and come to the sound conclusion, that the world's admiration is of no worth to him."

"But this is not the worst of selfish wealth. One's children are necessarily habituated to consider, that the business of this life, and all that life is given for, is to be rich. They receive no instruction which qualifies them to know how riches should be used. If they inherit, and become afterwards poor, they are in a miserable state, compared with a poor man's child, who thinks it no degradation, but a privilege, to labor in any honest vocation. There are some who think the statute of distributions is an unwise provision; it tends, they say, to break families down in three or four generations. So far from being wrong, this is the very best feature in our whole system of policy. If wealth could be entailed, in such a country as this, while education continues as it is, all the inducements to be intelligent and happy would disappear from the land. The less that is thought of wealth for its own sake, and the more that is thought of those qualities which no wealth can purchase, the better pretensions will Americans have to intelligence and happiness."

Tactful Sensibility of the Heart.—A noble youth of the family of Montgomery, from a fall and subsequent abscess on the side of the chest, had the interior marvellously exposed, so that after his cure, on his return from his travels, the heart and lungs were still visible and could be handled; which when it was communicated to Charles I., he expressed a desire that Harvey should be permitted to see the youth and examine his heart. "When," says Harvey, "I had paid my respects to this young nobleman, and conveyed to him the king's request, he made no concealment, but exposed the left side of his breast, when I saw a cavity into which I could introduce my fingers and thumb; astonished with the novelty, again and again I explored the wound, and first marvelling at the extraordinary nature of the cure, I set about the examination of the heart. Taking it in one hand, and placing the finger of the other on the pulse of the wrist, I satisfied myself that it was indeed the heart which I grasped. I then brought him before the king, that he might behold and touch so extraordinary a thing, and that he

might perceive, as I did, that unless when he touched the outer skin, or when he saw our fingers in the cavity, this young nobleman knew not that we touched the heart.—*Bell's Bridgewater Treatise.*

Extraordinary Product.—An experiment has lately been made on salt water obtained at the Messrs. Presten's Salt Works, on Holston River, which exhibited the following result. Twenty buckets full (sixty-seven gallons) of the water was put into a boiler, which evaporated in four hours, leaving a deposit of five bushels salt, weighing one hundred and fifty one pounds. This experiment shows that the bulk of salt is in the proportion of one-fourth to the water in which it is held. It is thought that there is known no water which approaches this in strength. There is not the slightest quantity of bittern or other foreign matter found in it. The supply of this water, is equal to the manufacture of five hundred bushels of salt in twenty-four hours.

Account of Common Salt.—It does now appear that the mineral kingdom contains a single species capable of being employed as food: but there is one mineral species which indirectly contributes to the nourishment of many other animals as well as man, and that is common salt, the flavor of which, to a certain extent, is not only grateful to the palate, but, practically speaking, mankind could not exist, or at least never have existed without the constant use of it. Thus, though employed in very small quantities at a time by any individual, and almost exclusively for the purpose either of preserving or of rendering his food more palatable, this substance may fairly be classed among the principal necessities of life; and correspondingly with this statement, we find that nature has supplied it in abundance, indeed in profusion often, in various parts of the globe: for, to say nothing of those apparently inexhaustible masses which occur among the solid strata of the earth, and which have been constantly quarried through successive ages from the earliest records of history, the ocean itself is a never-failing source of this valuable substance. In other instances salt springs afford the means of a ready supply; and throughout a considerable part of the sandy districts of Africa and Asia the soil itself abounds with it. The abundant supply of common salt coincides with its extensive utility. It is every where indispensable to the comforts of man; and it is every where found, or easily obtained by him. And, though not to the same extent, the same observation holds with reference to many other natural saline compounds. Thus carbonate of potash, and natron or carbonate of soda, alum, borax, sal ammoniac, and sulphate of iron, or green vitriol, which are most extensively useful salts in many processes of the arts, are either found abundantly in various parts of the world, or may be obtained by very easy means: while a thousand other saline compounds, which are rarely of any practical importance, are scarcely known to exist in a native state.—[Kidd's Bridgewater Treatise.]

TURKISH PROVERBS.

Don't trust to the whiteness of the turban, the soap was bought on trust.

Death is a black camel which kneels at every door. Blood is not washed out with blood, but with water.

THE SHEPHERD'S RESOLUTION.

[This fine old song was written by George Withers, a satirical writer of the times of James and Charles the First. It is extracted from one of his long pastoral poems, entitled "The Mistress of Philarete," published in 1622.]

Shall I, wasting in despair,
Die, because a woman's fair?
Or make pale my cheeks with care,
'Cause another's rosy are?
Be she fairer than the day,
Or the flowery meads in May
If she be not so to me,
What care I how fair she be
Shall my foolish heart be pined
'Cause I see a woman kind?
Or a well disposed nature
Joined with a lovely feature?
Be she meeker, kinder, than
The turtle-dove or polican,
If she be not so to me,
What care I how kind she be?
Shall a woman's virtues move
Me to perish for her love?
Or her well-deservings known,
Make me quite forget mine own?
Be she with that goodness blest,
Which may merit name of best,
If she be not such to me,
What care I how good she be?
'Cause her fortune seems too high,
Shall I play the fool, and die?
Those that bear a noble mind,
Where they want of riches find,
Think, what with them, they would do,
That without them, dare to woo:

And unless that mind I see,
What care I how great she be?
Great or good, or kind or fair,
I will use her the more despair.—
If she love me, this believe;
I will die ere she shall grieve.
If she slight me when I woo,
I can scorn and let her go.
If she be not fit for me,
What care I for whom she be?

AN INTERESTING AND USEFUL MAP.

A friend of ours has now in a state of forwardness, a Map upon which will be delineated nearly all the Railroads now chartered in the U. States. It is designed to show the present contemplated connexion of the different lines, as well as where others may hereafter be constructed to connect with them. It may be completed in a few weeks, and may be had either in sheets, or put up in morocco for pocket maps, in any quantity, by applying to the subscriber.

D. K. MINOR,

35 Wall street.

New-York, August 14, 1833.

AMERICAN INSTITUTE.

THE Sixth Annual Fair of the American Institute will be held in the city of New-York, at Masonic Hall, on Tuesday the 15th of October next, and continue three days.

Premiums, consisting of Diplomas, or Medals, will be awarded, as usual, for such articles of American production, as shall be adjudged superior either in material or workmanship.

As a new impetus seems to have been lately given to American industry, it is confidently expected that the Fair announced for October next, will present still more decisive evidence of the advancing condition of our agriculture, our manufactures, and the arts, than any of those which have preceded it.

Such ingenious and useful machinery as may be conveniently transported, and put in operation, will give interest and spirit to the occasion.

Each article should be labelled with the name of the manufacturer, or producer, and with the agent's name, and number, in this city.

The design is to inform buyers where they can supply themselves with the best articles. In this way, by means of former Fairs, many excellent workmen have become better known and have obtained permanent and profitable customers, who, while they have been better served, have at the same time rewarded and stimulated American skill and industry.

Articles entered for premiums must be delivered as early as Monday, the 14th of October.

More particular notices will be published previous to the Fair. For any other information which may be desired, apply to either of the Managers, in person or by letter.

JAMES LYNCH,
ANDREW WILLIAMS,
EDWARD T. BACKHOUSE,
CLARKSON CROLIUS, Jr.,
WM. F. FRYE,
JOHN SAMYSON,
JOSEPH TITCOMB,
JARED L. MOORE,
GEORGE BACON,

Managers.

New-York, July 4th, 1833.

A29 (13 oct R J

TOWNSEND & DUFFEE, of Palmyra, Manufacturers of Railroad Rope, having removed their establishment to Hudson, under the name of Duffee, May & Co. offer to supply Rope of any required length (without splice) for inclined planes of Railroads at the shortest notice, and deliver them in any of the principal cities in the United States. As to the quality of Rope, the public are referred to J. B. Jarvis, Eng. M. & M. R. Co., Albany; or James Archibald, Engineer Hudson and Delaware Canal and Railroad Company, Carbonate, Luzerne county, Pennsylvania.

Hudson, Columbia county, New-York,
January 20, 1833.

F 8 if

NOTICE TO MANUFACTURERS.

SIMON FAIRMAN, of the village of Lansingburgh, in the county of Rensselaer, and state of New-York, has invented and put in operation a Machine for making Wrought Nail with square points. This machine will make about sixty nails, and about forty to fifty in a minute, and in the same proportion larger sizes, even to spikes for ships. The nail is hammered and comes from the machine completely heated to redness, that its capacity for being clenched is good and sure. One horse power is sufficient to drive one machine, and may easily be applied where such power for driving machinery is in operation. Said Fairman will make, vend and warrant machines as above, to any persons who may apply for them as soon as they may be made, and on the most reasonable terms. He also desires to sell one half of his patent right for the use of said machines throughout the United States. Any person desiring further information, or to purchase, will please to call at the machine shop of Mr. John Humphrey, in the village of Lansingburgh.—August 15, 1833.

A29 if RM&F

RAILWAY IRON.

Ninety-five tons of 1 inch by 1 inch, lengths of 14 to 15 feet counter sunk holes, ends cut at an angle of 45 degrees with splicing plates, nails to suit.

350 do. of Edge Rails of 36 lbs. per yard, with the requisite chairs, keys and pins.

The above will be sold free of duty, to State Governments, and Incorporated Governments, and the Drawback taken in part payment.

A. & G. RALSTON,
20 South Front street, Philadelphia.

Models and samples of all the different kinds of Rails, Chairs, Pins, Wedges, Spikes, and Splicing Plates, in use, both in this country and Great Britain, will be exhibited to those disposed to examine them.

A73mcowr

STEPHENSON,

Builder of a superior style of Passenger Cars for Railroads,
No. 264 Elizabeth street, near Blocker street,
New-York.

RAILROAD COMPANIES would be well to examine these Cars; a specimen of which may be seen on that part of the New-York and Harlem Railroad, now in operation.
J 15 if

NOVELTY WORKS,

Near Dry Dock, New-York.

THOMAS B. STILLMAN, Manufacturer of Steam-Engines, Boilers, Railroad and Mill Work, Lathes, Presses, and other Machinery. Also, Dr. Nott's Patent Tubular Boilers, which are warranted, for safety and economy, to be superior to any thing of the kind heretofore used. The fullest assurance is given that work shall be done well, and on reasonable terms. A share of public patronage is respectfully solicited.

RAILROAD CAR WHEELS AND BOXES,
AND OTHER RAILROAD CASTINGS.

Also, AXLES furnished and fitted to wheels complete, at the Jefferson Cotton and Wool Machine Factory and Foundry, Paterson, N. J. All orders addressed to the subscribers at Paterson, or 60 Wall street, New-York, will be promptly attended to. Also, CAR SPRINGS.

Also, Flange Tires turned complete.

J 8 ROGERS, KETCHUM & GROSVENOR.



INSTRUMENTS.

SURVEYING AND NAUTICAL INSTRUMENT MANUFACTORY.

EWING & HEARTT, at the sign of the Quadrant, No. 58 South street, one door north of the Union Hotel, Baltimore, beg leave to inform their friends and the public, especially Eng. Agents, that they continue to manufacture to order and keep for sale every description of Instruments in the above branches, which they can furnish at the shortest notice, and on fair terms. Instruments repaired with care and promptitude.

For proof of the high estimation on which their Surveying Instruments are held, they respectfully beg leave to tender to the public, the following certificates from gentlemen of distinguished scientific attainments.

To Ewing & Heartt.—Agreeably to your request made some months since, I now offer you my opinion of the Instruments made at your establishment, for the Baltimore and Ohio Railroad Company. This opinion would have been given at a much earlier period, but was intentionally delayed, in order to afford a longer time for the trial of the Instruments, so that I could speak with the greater confidence of their merits, if such they should be found to possess.

It is with much pleasure I can now state that notwithstanding the Instruments in the service procured from our northern cities are considered good, I have a decided preference for those manufactured by you. Of the whole number manufactured for the Department of Construction, to wit: five Levels, and five of the Compasses, not one has required any repairs within the last twelve months, except from the occasional imperfection of a screw, or from accidents, to which all Instruments are liable. They possess a firmness and stability, and at the same time a neatness and beauty of execution, which reflect much credit on the artists engaged in their construction.

I can with confidence recommend them as being worthy the notice of Companies engaged in Internal Improvements, who may require Instruments of superior workmanship.

JAMES F. STABLER,

Superintendent of Construction of the Baltimore and Ohio Railroad.

I have examined with care several Engineers' Instruments of your Manufacture, particularly Spirit levels, and Surveyor's Compasses; and take pleasure in expressing my opinion of the excellence of the workmanship. The parts of the levels appeared well proportioned to secure facility in use, and accuracy and permanency in adjustments.

These Instruments seemed to me to possess all the modern improvement of construction, of which so many have been made within these few years; and I have no doubt but they will give every satisfaction when used in the field.

WILLIAM HOWARD, U. S. Civil Engineer.

Baltimore, May 1st, 1833.

To Messrs Ewing & Heartt.—As you have asked me to give my opinion of the merits of those Instruments of your manufacture which I have either used or examined, I cheerfully state that as far as my opportunities of my becoming acquainted with their qualities have gone, I have great reason to think well of the skill displayed in their construction. The neatness of their workmanship has been the subject of frequent remark by myself, and of the accuracy of their performance I have received satisfactory assurance from others, whose opinion I respect, and who have had them for a considerable time in use. The efforts you have made since your establishment in this city, to relieve us of the necessity of sending elsewhere for what we may want in our line, deserve the unqualified approbation and our warm encouragement. Wishing you all the success which your enterprise so well merits, I remain, yours, &c.

B. H. LATROBE,

Civil Engineer in the service of the Baltimore and Ohio Railroad Company.

A number of other letters are in our possession and might be introduced, but are too lengthy. We should be happy to submit them upon application, to any persons desirous of perusing the same.

ENGINEERING AND SURVEYING INSTRUMENTS.

The subscriber manufactures all kinds of Instruments in his profession, warranted equal, if not superior, in principles of construction and workmanship to any imported or manufactured in the United States; several of which are entirely new: among which are an Improved Compass, with a Telescope attached, by which angles can be taken with or without the use of the needle, with perfect accuracy; also, a Railroad Goniometer, with two Telescopes; and a Levelling Instrument, with a Goniometer attached, particularly adapted to Railroad purposes.

WM. J. YOUNG,

Mathematical Instrument Maker, No. 9 Dock street, Philadelphia.

The following recommendations are respectfully submitted to Engineers, Surveyors, and others interested.

Baltimore, 1837.

In reply to thy inquiries respecting the Instruments manufactured by thee, now in use on the Baltimore and Ohio Railroad, I cheerfully furnish thee with the following information. The whole number of Levels now in possession of the department of construction of thy make is seven. The whole number of the "Improved Compass" is eight. These are all exclusive of the number in the service of the Engineer and Graduation Department.

Both Levels and Compasses are in good repair. They have in fact needed but little repair, except from accidents to which all Instruments of the kind are liable.

I have found that thy patterns for the levels and compasses have been preferred by my assistants generally, to any others in use, and the Improved Compass is superior to any other description of Goniometer that we have yet tried in laying the rails on this Road.

This Instrument, more recently improved with a revolving telescope, in place of the vane sight, leaves the engineer scarcely any thing to desire in the formation or convenience of the Compass. It is indeed the most completely adapted to lateral angles of any simple and cheap instrument that I have yet seen, and I cannot but believe it will be preferred to all others now in use for laying of rails; and in fact, when known, I think it will be as highly appreciated for common surveying.

Respectfully thy friend,

JAMES F. STABLER, Superintendent of Construction of Baltimore and Ohio Railroad.

Philadelphia, February, 1837.

Having for the last two years made constant use of Mr. Young's "Patent Improved Compass," I can safely say I believe it to be much superior to any other instrument of the kind, now in use, and as such most cheerfully recommend it to Engineers and Surveyors.

E. H. GILL, Civil Engineer.

Germanstown, February, 1833.

For a year past I have used Instruments made by Mr. W. J. Young, of Philadelphia, in which he has combined the properties of a Theodolite with the common Level.

I consider these Instruments admirably calculated for laying out Railroads, and can recommend them to the notice of Engineers as preferable to any others for that purpose.

HENRY R. CAMPBELL, Eng. Philad.,
German and Norris Railroad.

ml 1y

SURVEYORS' INSTRUMENTS.

Compasses of various sizes and of superior quality, warranted.

Leveling Instruments, large and small sizes, with high magnifying powers with classes made by Troughton, together with a large assortment of Engineering Instruments, manufactured and sold by

E. & G. W. BLUNT, 154 Water street,
corner of Maidenlane.

FOR SALE.

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A94J M & F

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METEOROLOGICAL RECORD, KEPT IN THE CITY OF NEW-YORK.

From the 17th to the 23d day of September, 1833, inclusive.

(Communicated for the American Railroad Journal and Advocate of Internal Improvements.)

Date.	Hours.	Thermometer.	Barometer.	Winds.	Strength of Wind.	Clouds from what direction.	Weather.
Sept'r 17.	6 a. m.	56	30.25	NNE-W by S	faint	{ w by s }	fair
	10	63	30.28	SW-S	light	{ sw }	..
	2 p. m.	70	30.22	..	mod.-fresh	{ sw }	.. —cloudy
18.	6	65	30.21	..	fresh	{ sw }	cloudy
	10	62	30.20	..	..	..	..
	2 p. m.	64	30.07	SW	moderate	..	rainy
19.	6 a. m.	62	30.10	..	..	SW	..
	10	64	30.07	SW	..	..	rain
	2 p. m.	66	30.00	SW	moderate	..	cloudy
20.	6 a. m.	67	30.00	..	calm	..	..
	10	67	30.00	..	light	WSW	.. and foggy —fair
	2 p. m.	80	30.00	..	..	..	..
21.	6 a. m.	70	30.02	..	..	..	..
	10	70	30.02	..	..	..	..
	2 p. m.	80	30.00	..	..	..	..
22.	6 a. m.	76	29.97	WSW	..	..	..
	10	74	29.98	..	moderate	..	..
	2 p. m.	84	29.91	..	..	..	..
23.	6 a. m.	81	29.90	..	..	..	..
	10	76	29.89	..	..	..	..
	2 p. m.	84	29.91	..	..	..	..
24.	6 a. m.	69	29.92	NNW-N	..	{ SW }	..
	10	66	30.00	N	..	{ N }	..
	2 p. m.	66	30.00	N-by W	..	{ SW }	..
25.	6 a. m.	65	30.03	..	..	..	..
	10	61	30.10	..	..	..	..
	2 p. m.	64	30.23	NNE	..	sw by s	fair
26.	6 a. m.	54	30.20	..	..	..	..
	10	60	30.25	N by E	..	..	.. —thin variegated cirri from SSW
	2 p. m.	64	30.23	N by E	..	..	..
27.	6 a. m.	62	30.21	..	light	{ SW }	..
	10	58	30.21	..	..	{ N by S }	..
	2 p. m.	53	30.20	NE	moderate	sw by s	..
28.	6 a. m.	62	30.22	ENE	fresh	..	.. —detached cirri beautifully variegated
	10	64	30.16	..	moderate	sw	..
	2 p. m.	63	30.15	..	..	..	..
29.	6 a. m.	60	30.10	..	light	..	..
	10	60	30.10	..	..	..	..
	2 p. m.	60	30.10	..	..	..	..

Average temperature of the week ending Monday, September 23, 66° 94.

METEOROLOGICAL RECORD, KEPT AT AVOYLE FERRY, RED RIVER, LOU.

For the month of August, 1833—(Latitude 31.10 N., Longitude 91.59 W. nearly.)

(Communicated for the American Railroad Journal and Advocate of Internal Improvements.)

Date.	Thermometer.			Wind.	Weather, Remarks, &c.
1833.	Morn'g.	Noon.	Night.		
August 1	75	86	78	calm	clear all day—Red River falling
2	74	88	76	..	.. ..
3	75	88	84	..	.. ..
4	78	88	82	sw—light	cloudy
5	78	92	86	..	clear—evening calm and cloudy
6	78	80	76	calm	.. morning—11 a.m. fine shower fr NW—heavy thunder and rain in even'g
7	74	89	84	..	.. .. —evenings cloudy—sowed turnips, kale, cresses, lettuce, and
8	78	90	86	..	clear—martin birds left here [radish seed
9	78	89	84	NE	.. —flying clouds—evening and night, showers
10	77	88	80	W	cloudy all day—sweet potatoes very large for use
11	79	85	80	sw	.. —thunder showers evening
12	78	88	83	..—light	clear—evening calm
13	73	88	85	calm	.. —Red River fell this month 7 feet 10 inches, and off the flat
14	74	90	86	..	..
15	74	90	87	NW	.. —evening calm and cloudy
16	74	87	82	N—high	.. —flying clouds
17	68	84	80	NW—light	..
18	67	87	78	..	..
19	67	86	82	W—light	..
20	69	88	84	calm	..
21	72	89	82	NE—light	.. —light flying clouds
22	69	89	83	..	.. —evening calm
23	72	91	82	N	.. .. cloudy, and thunder, no rain
24	74	91	81	calm	cloudy
25	74	90	82	NE—light	clear
26	73	89	82	calm	..
27	71	88	84	..	..
28	70	89	83	NE—light	.. —light flying clouds
29	70	89	83	..	..
30	71	89	78	..	.. —evening calm and cloudy
31	71	88	79	..	cloudy
Average	73	88	82	General average of temperature for the month of August, 81°.	

Red River fell from the 1st to the 13th August, 7 feet 10 inches, and from the 14th to the 31st, 9 feet 4 inches—making in all the month, 17 feet 2 inches; and is now below high water mark 22 feet 10 inches.

MARRIAGES.

On Saturday evening, 29th inst. in St. Thomas's Church, by the Rev. F. L. NAWKE, AUGUSTUS T. COWMAN, to ANN B. daughter of James GILLENDER, all of this city.

By the Rev. Dr. BROWNE, AMOS WILCOX, Esq. to Mrs. ELIZA LUMBER, daughter of John Nalle, of New York.

On Thursday evening last, JOSEPH D. BLADE, Esq. of Portsmouth, N.H., to Miss CATHERINE A., eldest daughter of Wm. Scherman, of this city.

On Thursday evening, Sept. 26th, DANIEL H. TOMPENS, to ELIZA, daughter of William Wright.

On Thursday evening, 28th Sept., by the Right Rev. Bishop Onderdonk, JOHN W. SCHMIDT, Jr. M. D., to Miss MARY ELIZABETH, only daughter of H. Baker, Esq., all of this city.

At Albany, on Tuesday evening, by the Rev. Dr. Ludlow, WILLIAM COOPER, to Susan C., daughter of the hon. James Van Buren.

On Wednesday evening last, at Newtown, L. I. by the Rev.

Mr. Shelton, Mr. CHARLES H. JUDSON, merchant of this city, to MARY, daughter of the late Capt. Daniel S. Moore, of the former place.

At Richmond, C. W. MURDO, of New Orleans, to Miss ANN F. DIXON, and CARTER CRITTENDEN, to Miss JULIET ADELLA HATCHER.

At Onondaga Hill, on the 19th, by Rev. J. H. Prentice, Mr. GEORGE REBE, of Watertown, Jefferson co. to Miss ESTHER O. JUDG, of the former place.

The same day, by the same, F. C. D. M'KAY, Esq. of Warsaw Genesee co. to Miss ANGELINE J. JUDG, of Onondaga.

In Middlebury, (Vt.) on the 16th ult. by Rev. Mr. Merrill, Rev. HENRY SMITH, Prof. of Languages at Marietta College, Ohio, to Miss HANNAH BATES, daughter of Rev. Joshua Bates.

Yesterday morning, at Elizabethtown, New-Jersey, by the Rev. THOMAS M. VELL, Mr. FRANCIS BURRITT, of New-York, to Miss PHOEBE PERKINS, of the former place.

In Philadelphia, on the 25th inst. by John Swift, Esq. Mayor, GEORGE D. COOPER, Druggist of this city, to Miss Dr.

BORAH, daughter of Thomas Walter, of Lower Merion, Township, Montgomery Co., (Penn.)

DEATHS.

On Sunday morning, at 5 o'clock, of a lingering disease, Mrs. ANN HATFIELD, in the 24th year of her age.

On Friday, 27th ult. at Manarock, Westchester county, EDWARD M. JOHNSON, in the 45th year of his age.

In Russellville, Ky., Maj. Morgan A. Heard, known to the public as the individual who attempted the life of Mr. Arnold, of Tennessee, on the steps of the Capitol, during the session of Congress before last.

In Utica, on the 19th inst. after a long and painful sickness, Mrs. Sophia Bagg, wife of Moses Bagg, Esq., in the 53d year of her age.

At Pensacola, on the 2d inst., Capt. David Christie, aged 35, formerly of New York.

At New Windsor, Orange county, N. Y., WILLIAM, infant son of John Ellison, Esq.

At Norfolk, LITTLETON S. SAVAGE.—At Pensacola, Captain R. B. THROCKMORTON, of Norfolk.

At Chicago, on the 24th ult. EDWARD SUMMERFELD, Esq. from Georgia, lately from Missouri.

At Atlas, Illinois, Mrs. LUCINDA RITCHIE, aged 48 years, late of St. Louis.

In Green County, on the 1st ult. Mr. HUGH M'GILL, aged 34 years.

In St. Louis, of the cholera, on Monday, after a sickness of eight hours, AMELIA ANN, one of the Sisters of Charity.

On the 11th ult. at New Orleans, of yellow fever, Mr. JAMES FINDLAY, of Fortes, Murryshire, Scotland.

At New Orleans, of the yellow fever, Cesar Wendell, eldest son of John L. Wendell, Esq., of Albany.

"Mr. Wendell," says the New Orleans Mercantile Advertiser, "had resided in this city for the last two years, and by possessing a frank, independent, and generous disposition, he had endeared himself to a large circle of friends, who, while they deeply and sincerely sympathize with his bereaved and afflicted relations in his loss, bow with submission to the decrees of that all-wise and Supreme Being, who gave and who hath taken away."

Sales of 151 Lots of Ground at Mount Prospect, L. I., 24 miles from Brooklyn Ferry, by James Bleeker & Sons, October 1, 1833.

5 lots \$160 00 each, \$360 00	3 lots \$105 00 each, \$315 00
4 do. 85 00 do. 340 00	9 do. 130 00 do. 1170 00
3 do. 72 50 do. 217 50	8 do. 75 00 do. 600 00
4 do. 130 00 do. 520 00	2 do. 125 00 do. 250 00
4 do. 110 00 do. 440 00	4 do. 82 50 do. 330 00
7 do. 62 50 do. 437 50	4 do. 80 00 do. 320 00
2 do. 60 00 do. 120 00	2 do. 85 00 do. 170 00
5 do. 55 00 do. 275 00	4 do. 100 00 do. 400 00
2 do. 117 50 do. 235 00	4 do. and a cottage, 950 00
1 do. 93 00 do. 93 00	4 do. 127 50 do. 510 00
2 do. 60 00 do. 120 00	5 do. 250 00 do. 1250 00
2 do. 50 00 do. 100 00	4 do. 152 00 do. 610 00
6 do. 40 00 do. 240 00	4 do. 160 00 do. 640 00
3 do. 87 50 do. 302 50	4 do. 125 00 do. 500 00
5 do. 65 00 do. 325 00	2 do. 227 50 do. 455 00
1 do. 47 50 do. 47 50	4 do. 230 00 do. 880 00
7 do. 90 00 do. 630 00	6 do. & frame build'g 2475 00
4 do. 95 00 do. 380 00	3 do. 100 00 each, 576 00
2 do. 120 00 do. 240 00	4 do. gore 500 00
1 do. 140 00 do. 140 00	
1 do. 155 00 do. 155 00	
	\$19,252 60

NOTE.—The above Lots were on an average 25 by 100, and faced on streets to be laid out through the tract and on the turnpike road leading to Flatbush.

GRACIE, PRIME & CO. having this day taken into co-partnership JOHN CLARKSON JAY, will continue their business under the same firm.—New-York, 1st October, 1833.

WINCHESTER AND POTOMAC RAILROAD.

TO CONTRACTORS FOR EXCAVATION AND MASONRY.—Proposals will be received by the undersigned at Taylor's Hotel, in Winchester, Va. on the 7th day of November next, for the Grading and Masonry of Twenty-seven miles of the Winchester and Potomac Railroad, commencing near the town of Winchester, and ending at the Shenandoah River. The above work will be divided into sections of convenient length; and plans and profiles of the line, and drawings of the requisite constructions, will be exhibited at Winchester, for one week previous to the letting.

Proposals will be received at the same time and place, for delivering, on the line of the Railroad, Four hundred thousand lineal feet of Heart Yellow Pine or White Oak Rails, the dimensions of the rails to be five inches wide, by nine inches deep, and in lengths of fifteen and twenty feet.

Any further information in relation to the above work will be given on application, verbally or by letter, to William H. Merrill, Principal Assistant Engineer, Winchester, Va. or to the Assistant Engineers on the line.

Sept. 27th, 1833. MONCURE ROBINSON, C. E.

PATENT RAILROAD, SHIP AND BOAT SPIKES.

The Troy Iron and Nail Factory keep constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years successful operation and now almost universal use in the United States (as well as England, where the subscriber obtained a Patent,) are found superior to any ever offered in market.

Railroad Companies may be supplied with Spikes having counter-sunk heads suitable to the holes in iron rails, to any amount and on short notice. Almost all the Railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

All orders directed to the Agent, Troy, N. Y., will be punctually attended to.

HENRY BURDEN, Agent.

Troy, N. Y. July, 1831.

P. S.—Railroad Companies would do well to forward their orders as early as practical, as the subscriber is desirous of extending the manufacture on as to keep pace with the daily increasing demand for his Spikes.

J. B. Tain

H. BURDEN.